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UNIVERSITY OF IDAHO
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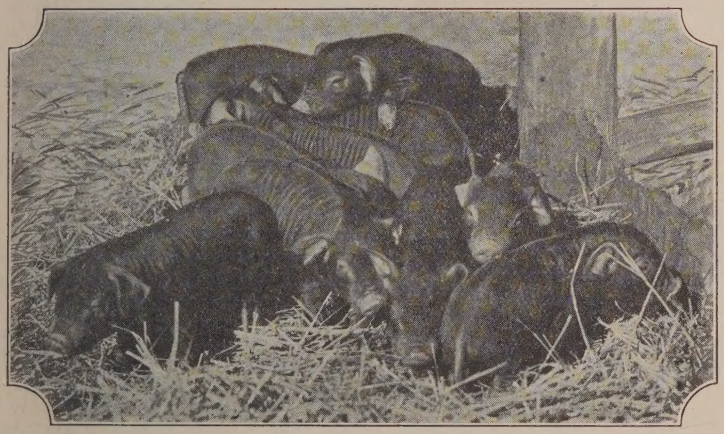
The 4-H Pig Club



Large Litters Are Essential for Normal Profits

COOPERATIVE EXTENSION SERVICE IN AGRICULTURE AND HOME ECONOMICS OF THE STATE OF IDAHO UNIVERSITY OF IDAHO EXTENSION DIVISION AND UNITED STATES DEPARTMENT OF AGRICULTURE COOPERATING

ANIMAL HUSBANDRY SECTION

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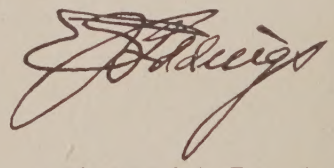
4-H Club Work.

4-H CLUB work is one of the activities sponsored by the Agricultural and Home Economics Extension Service of the College of Agriculture of the University of Idaho. It involves the cooperation of several agencies such as county agents, field specialists, home demonstration agents, subject matter departments of the College of Agriculture, and men and women who act as local leaders in rural communities. 4-H Club work is one of the most important educational undertakings of the University of Idaho.



Dean of Agriculture, and Director of the Extension Service in Agriculture and Home Economics.

The 4-H Pig Club

J. E. Nordby and E. M. Gildow*

Introduction

SUCCESS in any enterprise usually is measured in the proportion in which facts fundamental to the enterprise are available and intelligently applied. In this bulletin you will find some of the basic facts which apply to pork production in Idaho. If these are adopted and applied to your particular problems, in close cooperation with your leader, you should be able to successfully carry out a pig club project. You will find in the *Idaho 4-H Club Leader's Manual,* Extension Bulletin No. 93, general instructions for the organization and requirement of standard clubs. Detailed requirements for pig club projects are given in this bulletin as they apply to the sow and litter project, the purebred gilt project, and the market pig project.

In all divisions of this project club members are required to own the animals and if they are purebred, the registration papers must be in the name of the member.

Division I.—The care and management of one or more brood sows and their litters for a period of at least six months. Records should start at least one month before farrowing. Sows should farrow after March 1.

Division II.—The care and management of four or more pigs intended for market hogs from time weaned until ready for market.

Division III.—The care and management of one or more purebred sow pigs, intended for breeding purposes, for a period of at least six months from time weaned. Pigs must be farrowed after March 1.

Division IV.—The care and management of a breeding herd composed of two or more brood sows and their litters. Records are to be kept throughout the year.

Exhibits and Awards—In all pig club classes the exhibit and basis of awards shall be as follows:

Division I.—The exhibit shall consist of four pigs from the litter.

Division II.—The exhibit shall consist of a single fat hog.

Division III.—The exhibit shall consist of a junior sow pig.

Division IV.—The exhibit shall consist of breeding herd of four pigs.

Basis of Awards

(a) Best animals	65
(b) Handling of animals in show ring	10
(c) Completeness and accuracy of record book	25
Possible Score	100

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Requirements of the Sow and Litter Club Project

Object. In this project it is the object to demonstrate the type of sow that should be used in club projects, how to properly feed and manage sows before, during and after farrowing, and how to take care of all details in connection with feeding, managing, and marketing the pigs. If the pigs are to be developed for breeding and show purposes the incidentals connected with this type of management will also be a part of the demonstration.

Work Required of Each Club Member. A member is required to feed and care for a sow—which is purchased some time before farrowing—throughout the remaining period of pregnancy, during and after farrowing. He must also feed and care for all pigs until they are ready for the market or are ready for breeding, if they are breeding hogs. Most of the pigs should be developed for market and should weigh from 180 to 200 pounds at from five to six months of age. Save only the best pigs for breeding purposes.

Records. The Extension Service of the University of Idaho provides each club member with a "Feed Record Sheet" and "Club Record Book" in which all records are kept. These records comprise the kinds and amounts of each feed together with their price; the date, number and sex of pigs farrowed; the final weight of the market pigs; and a complete financial statement. The club member must also prepare in story form his experiences for the year. Put down in your record book the figures as you get them so you will not have to guess later when they may have slipped your mind. Records are very important in your summary credit for the year's work. Be sure to ask your club leader how to keep them correctly.

Ownership. The club member is required to own the sow with which he is working and to provide the necessary feed to complete his project. It will require, in round numbers, about 800 pounds of grain for each pig that is fed to a weight of 200 pounds.

Time Required. Time must, of course, be set aside each day for the care of sow and litter. Six or more club meetings should be attended. These are, for the most part, held in the evenings. One all-day club tour is required, and one day must be spent at a club round-up at the close of the year's work.

Time of Organization. It is preferable to start the sow and litter club soon after the sows are successfully in pig. This gives the club members the opportunity to learn many things about the sow before she farrows.

Suggested Program for Meetings for 4-H Pig Clubs

Local leaders and clubs are expected to adapt this outline to local conditions and to the project division in which the club members are enrolled. It is intended that the club shall study the subjects most important to the club project and conduct the lessons on a seasonal program.

Data on the feed record sheets and other facts pertaining to the project should be transferred to the record books once a month and record books

kept up to date and brought to each meeting for examination by the local leader.

First Meeting

(Idaho 4-H Club Manual)

Organization of the Club

The local leader should preside until the officers are elected.

I. Business Meeting.
   1. Explanation of the requirements of a standard club, and duties of officers and members by the local leader or Extension Agent.
   2. Election of club officers.
   3. Select a name for the club.
   4. Adoption of constitution (Idaho 4-H Club Manual).
   5. Set date, hour, and place of meetings.

II. Instruction by local leader.
   1. Brief outline of the main events of the club year.
      a. Six or more regular meetings.
      b. Exhibit at fairs and shows.
      c. Judging competition with other clubs.
      d. Fitting and showing contests.
      e. Public demonstrations.
      f. Club tours.
      g. Club picnics and recreation.
   2. Distribution of club literature.
   3. Discussion of securing animals for projects.
   4. Discussion of record keeping.

III. Assignments for next meeting: (Assignments should be made from the following subjects according to their seasonal importance).
   1. Learn the club pledge and give it at roll call next meeting.
   2. Care of brood sow during wintering and farrowing, selecting a breed.
   3. Bedding.
   4. Rations for sow before farrowing.
   5. Preparation for farrowing.
   6. Anemia in pigs.
   7. Cleaning the farrowing quarters.
   8. Selecting, feeding, and managing herd boar.

IV. Recreation Period.
   1. Games, stunts, etc.

Second Meeting

(March)

I. Business meeting—Club president in charge.

II. Instruction—local leader in charge.
   1. Discussion from subjects assigned at previous meeting.

III. Assignments for next meeting from the following suggestions that apply to club members' projects at this season:
   1. Farrowing—lesson 6.
   2. Feeding after farrowing.
   3. Exercises for the pigs.
   4. Thumps, needle teeth.
   5. Marking the pigs.
   6. Feeding orphan pigs.
   7. Rations for the sow with suckling pigs.
   8. Feeds generally available for swine.

IV. Recreation.

Third Meeting

(April)

I. Business meeting—Club president in charge.

II. Instruction period—local leader in charge.

1. Discussion from subjects assigned at previous meeting.

III. Assignments for next meeting from the following subjects of seasonal importance:
1. Castration.
2. Weaning.
3. Creep feeding.
4. Time to breed for fall litter.
5. Treatment of pigs for worms.
6. Hog lot sanitation.

IV. Recreation.

Fourth Meeting
(May)

I. Business meeting.
II. Instruction period, local leader conducts the discussion on subjects assigned at previous meeting.
III. Assignments for next meeting—Feeding pigs on pasture.
1. Value of pasture as a hog feed.
2. Suitable rations on pasture.
3. Self feeders.
4. Wallows and shade.
5. Protein supplements for pasture and barley.

IV. Recreation.

Fifth Meeting
(June)

I. Business meeting.
II. Instruction period—Report on assignments made at previous meeting.
III. Assignments for next meeting—Judging swine.
1. The value of swine judging.
2. Procedure in judging swine.
3. Giving reasons for placing.
4. Discuss the names of the parts of a hog.
5. Discussion and study of the swine score card.
6. Compare the lard hog score card and the score card for breeding animals.

IV. Recreation.

Sixth Meeting
(July)

I. Business meeting.
1. Appoint committees for judging day program.

II. Instruction period.
1. Plan judging trip on demonstration for next meeting.

III. Judging swine (continued).
1. Explanation of terms used in judging swine:
(a) Type, (b) breed type, (c) breed character, (d) balance or symmetry, (e) quality, (f) scale, (g) sex character, (h) substance.
2. Judging demonstration by the local leader, county agent, club agent or specialist.

IV. Recreation.

Seventh Meeting
(August)

I. Business meeting.
1. Selecting demonstration team (See 9th meeting).

II. Instruction period.
1. Report on assignments from previous meeting.
2. Judging demonstrations.

III. Assignments for next meeting:
1. Fattening pigs in dry lots.
2. Explanation of nutritive ratio.
3. Rations for fattening pigs.
4. Protein supplements for fattening swine.

5. Feeding show barrows.
6. Marketing.

IV. Recreation.

Eighth Meeting
(September)

I. Business meeting.
   1. Discussion of fall fairs, contests, exhibits.

II. Report on assignments made at previous meeting.

III. Assignments for next meeting. Preparing for show:
   1. How to select animals for show.
   2. Fair classifications.
   3. Base dates for competing ages.
   4. Trimming the toes.
   5. Washing, oiling, etc.
   6. Lifting crate.
   7. Trimming hair.
   8. Training the pig to show.
   9. Construction and use of hurdle.
   10. Marketing.

IV. Recreation.

Ninth Meeting
(October)

I. Business meeting.
   1. Demonstration by teams.
   2. Each club should have a demonstration on some pig club phase, such as:
      a. Construction of an "A" type house.
      b. Feeding trough.
      c. Building a pig creep.
      d. Building an artificial shade.
      e. Mixing a ration for growing pigs.
      f. Marking pigs for identification.
      g. Castration.
      h. Illustrated lectures on the following:
         1. Pasture management for swine.
         2. Some phase of sanitation program.

II. Discussion on subjects assigned.

III. Assignments for next meeting.

IV. Recreation.

Tenth Meeting
(October)

I. Business meeting.
   1. Appoint committees for Achievement Day.
   2. Discussion of record books.

II. Instruction by local leader.
   1. Demonstration team practice.
   2. Complete record books.
   3. Summary of year's work by club leader to be prepared for Achievement Day.

III. Assignment for next meeting.
   1. Local leader outlines duties of club members for Achievement Day.

IV. Recreation.

Eleventh Meeting
Achievement Day

I. Address of welcome by club president.

II. Response by parent of club member.

III. Demonstrations by club teams.

IV. Summary of year's work by club leader and plans for next year.

V. Songs and yells.

VI. Presentation of awards.
VII. Club pledge.

Twelfth Meeting

I. Business meeting.
   1. Discuss plans for next year.
   2. Appoint program committee.
II. Instruction period.
   1. Assignments for next meeting:
      a. Housing swine.
      b. Shipping crates.
      c. Portable loading chutes.
III. Recreation.

Other Meetings

It has been impossible to arrange a program so that all the subject matter in this bulletin may be covered in twelve monthly meetings, and also cover all the project problems that should be studied. It will be necessary to spend time in additional meetings to study feeding values, nutritive ratios, swine diseases, livestock judging, etc.

The leader should use the above program as a guide in planning a program of work rather than as a hard and fast schedule of meetings. Where clubs are organized later than February, it may be necessary to omit some meetings at first and arrange to study those topics at later meetings.

Lesson I

Selecting a Breed

IT IS GENERALLY recognized that there is little material advantage in one breed over another. The breed for which a club member has a personal liking should be selected. He will be likely to get better results from working with a breed that he likes. One should, however, not overlook the advantage of selecting the breed which is most extensively raised in the community. Usually such a breed offers the opportunity of a larger selection of sows or gilts, close at hand, and it often affords the additional privilege of securing the services of high quality boars at reasonable costs. The prices of sows or gilts in the home community usually are lower than are the prices of "imported" sows to which transportation costs must be added. If the sow or gilt purchased at home does not prove desirable, usually a satisfactory adjustment will be made for the club member without additional costs. (See Farmers' Bulletin No. 1263F—*Breeds of Swine.*)

Selecting the Sow or Gilt

A brood sow should have considerable length. She should be reasonably wide and be uniform in width throughout her entire length. She must be deep because upon this factor depends, in large part, her usefulness as a producer of pigs that are efficient feeders. The shoulders must be laid closely at the top. The side should be long, deep, and smooth. High quality hams are, as a rule, deep, full, and always smooth. The neck should be neat with moderate length and fullness at the shoulder. The width and length of head should balance. The ears should be medium in size and be lightly carried. The eyes should be reasonably prominent. There should be no wrinkles in the forehead of a high quality sow. Sound feet and legs set squarely under the body are desirable. All of these

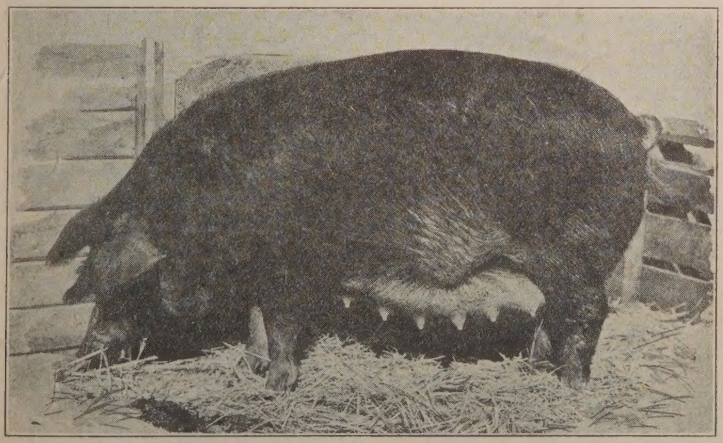

Fig. 1.—A deep, long, and well-balanced smooth sow that weighed 445 pounds just before she farrowed at twelve months of age. This sow has six well-developed and equally spaced teats on each side.

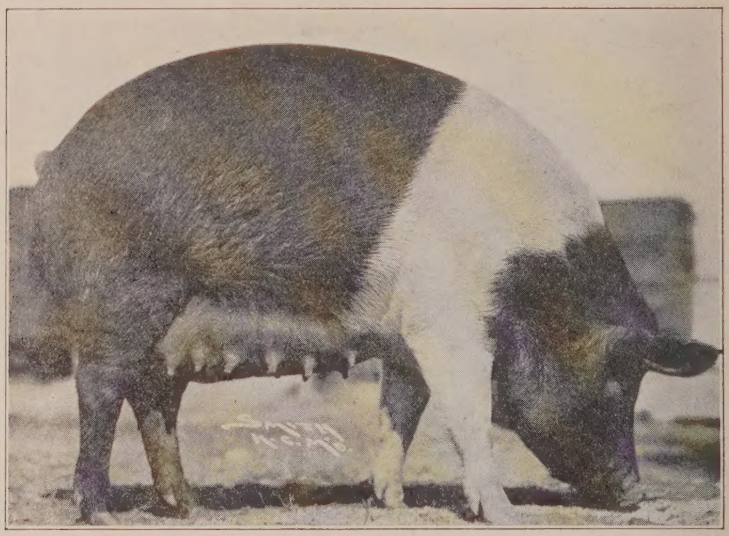

Fig. 2.—A very well-balanced Hampshire sow. She is deep, smooth, and well-balanced throughout. Note the excellent line of useful teats.

Fig. 3.—A Spotted Poland China sow. She is a large boned, well-developed sow.

commendable characteristics are always uniformly developed in a well-balanced and breedy sow. The hair should be straight and of high quality. Last, but not least, the sow should have not less than ten normal and properly placed teats.

Blind Teats. A "blind" teat is one in which the end has failed to develop normally but is telescoped back into the body of the teat. A pig cannot get milk from such a teat. Blind teats appear to be inherited. Gilts with blind teats should not be saved for breeding purposes.

Whorls. Do not select a sow with a stiff curly coat of hair, or a sow with a whorl in her hair. Whorls are often called "swirls". The hair spirals to the right or left, usually on the loin or rump and sometimes on the neck. Often the hair disturbance is more general and pushes against the normal hair stream making the coat of hair appear very rough. Hair disturbed in this way cannot be combed and brushed straight. This defect is inherited. Boars and sows with the defect should be eliminated. Sows which produce pigs with whorls, and boars, which sire pigs with whorls should be eliminated at the earliest convenience. A pig with a whorl should always be placed at the bottom in a show ring. All breed associations discriminate against whorls and some associations will not register pigs that have whorls. A whorl is a disadvantage in a market hog because it makes the pig look rough in the hair.

Time to Breed

The time to breed will depend upon the object of the club project. If it is the plan to farrow the pigs early to get them ready for the best market, which usually comes in the latter part of August or the first of September, the pigs should be farrowed in March. Sows bred November 11 will farrow on one of the first days in March. March gilts that have been properly developed will weigh from 200 to 250 pounds in November at which time they are large enough to be bred for March farrow. A record should be carefully made of the breeding date. With the aid of the accompanying gestation table, the club member will be able to determine when his sow will farrow if he knows the date she is bred.

Gestation Table

The gilt will farrow about 112 days after she is bred. You will be able to calculate from the following table the time the pigs will be farrowed:

Sow bred	Should farrow
Nov. 11	March 3
Nov. 14	March 7
Nov. 20	March 12
Nov. 25	March 17
Nov. 30	March 22
Dec. 5	March 27
Dec. 10	April 1
Dec. 15	April 6
Dec. 20	April 11
Dec. 25	April 16
Dec. 30	April 21

Sow bred	Should farrow
May 12	Sept. 1
May 15	Sept. 4
May 20	Sept. 9
May 25	Sept. 14
May 30	Sept. 19
June 5	Sept. 25
June 10	Sept. 30
June 15	Oct. 5
June 20	Oct. 10
June 25	Oct. 15
June 30	Oct. 20

Fig. 4.—A very smooth, sound-footed Duroc gilt that has an abundance of style and good wearing qualities.

Fig. 5.—Poland China sow.

The gilt should be mated to the best available boar in the community. When suitable boars are not available in the community the members of a club often pool their interests and buy one that is acceptable. The boar

may be kept by a member of the club who is conveniently located. Maintenance costs are, as a rule, prorated among the members of the club. Often outside service fees will pay for the cost of keeping the boar.

Questions

1. What breed should you select? Why?
2. Describe a desirable gilt to use as a breeding gilt.
3. What are blind teats?
4. What are whorls?
5. What time of the year should a gilt be bred if you are interested in marketing her pigs the last part of August?
6. To what kind of a boar should a sow be mated?
7. If a good boar is not available in the community, how may it be secured for mutual benefit to the club members?
8. What is a gestation table?

Lesson II

Selecting, Feeding and Managing the Herd Boar

Selecting the Boar

THE BOAR is by far the most important individual in the herd. You have often heard it said that "the boar is one-half of the herd". This statement is made with a view of emphasizing the necessity of using a good boar. The boar, of course, is one-half of the herd only if he is equal in individuality and breeding qualities to the females in the herd. If the boar is no better than the sow, no improvement can be expected in the pigs. But we are interested in improving the herd by producing pigs that are superior to the sows. In order to do this we must use a boar that is superior to the sows. When a boar is superior to the sows to which he is mated he is more than one-half of the herd. When we say that the boar is more than one-half of the herd we have in mind that he has not only influenced every pig that has been farrowed in the herd as much as have the sows, but he is usually responsible for contributing those qualities that make for improvement in the pigs. It is not very often that a sow produces pigs superior to herself if she is mated to a boar that is equal only to herself.

Good purebred boars cost very little more than grade boars. Grade boars are so uncommon in Idaho that it seems rather odd to even speak of them. All purebred boars are not good boars. The best breeding boars are purebred, and, as a rule, they are also the most commendable from the standpoint of individual excellence. You should, therefore, make an effort to learn as much as possible about the appearance of a desirable boar.

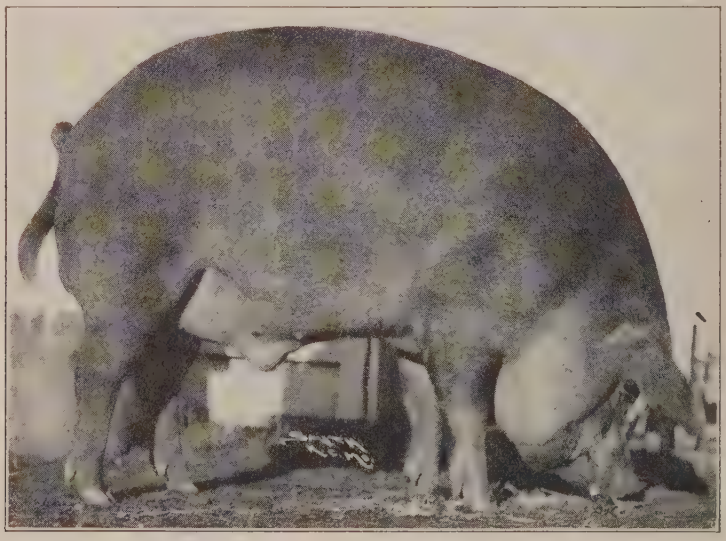

Fig. 6.—Duroc Jersey boar. Note the depth, smoothness, well-set legs, and general neatness.

Fig. 7.—A Hampshire boar. This boar is wide, deep and smooth. Note strength of back and nicely turned topline.

Fig. 8.—A junior Poland China boar pig. This boar may seem somewhat high on his legs. The condition is, however, that with maturity he will, no doubt, develop ample depth and massiveness. He is also a quality pig. This is a good type to select in young boars. He has been developed as a very rugged boar pig.

A boar should be rugged and masculine. These desirable characteristics should not be confused with coarseness and viciousness—both of which are as undesirable as they are unnecessary. Thick, wide and coarse shoulders are often erroneously associated with masculinity in a boar. Such shoulders are generally the result of heredity and will often be transmitted to the pigs. It is impossible to make a smooth barrow from a coarse-shouldered pig. Demand considerable growth in a boar. A growthy boar usually transmits to his pigs the tendency to grow rapidly. Rapidly growing pigs are, as a rule, the most economical pigs.

A boar should have ample length that shows the proper balance in neck, shoulder, back and rump. Shortness is emphasized in the neck and back. The rump should be long and well developed, and the entire top line should be heavily muscled and supported in a smooth and uniform arch. The loin must be full and smooth. Thin-loined boars often weave when walking. Superior sides are invariably deep and the underline neatly carried. The hams must be smooth, deep, wide, and nicely balanced. The shoulders should be deep, neatly laid at the top and should not carry too heavy a shield. The shield is of service in combat only, hence, is of little use under our domesticated conditions. The bone should be large, but not coarse. The legs must be properly placed, making it possible for the boar to walk straight. The walk of a boar is important and he cannot walk straight if all parts of the body, including the feet and legs, do not properly coordinate. A boar with a scrotal hernia or with only one testicle, should not be selected for both of these defects are inherited.

Feeding and Managing

A boar should not be used much for breeding before he is eight months of age. When buying a boar, it is usually desirable not to make a selection before the pig is at least five or six months old. It often happens if a pig is selected at a younger age that he will not meet expectations when he is subjected to new surroundings and a change in feeding and management. It is of advantage also to have more maturity in the pig when the selection is made so the characteristics which serve as guides in selection will be more developed.

Boars should not be allowed to run with the sow herd. This applies especially to immature boars. A young boar should ordinarily not be allowed more than one service a day for a short breeding season and preferably only one every other day for an extended breeding season. A mature boar may be allowed two services each day if the breeding season is of normal length. No sow need be bred more than once each time she is in heat.

The boar should be kept in a good sized lot which is equipped with comfortable sleeping quarters in winter. This lot should not join the lot in which the sows are kept. The boar should be kept on pasture in the forage season.

Boars, are, as a rule, irregular feeders. During the breeding season they go off feed very easily. It is essential during this period to give them every encouragement to stay on feed by keeping all the equipment clean and by feeding at regular hours a combination of feeds that are appetizing and nourishing. The boar often refuses the feed if it is left in the trough

Fig. 9.—Removing tusks from a boar. This is also a common method used in restraining hogs for worm treatment and vaccination. **A.** A simple rope noose for holding the boar. For removing noose pull rope end "X" after the tied end has been released. **B.** Boar in position, showing same type of noose made from three strands of wire in place of the rope. **C.** Cutting tusks with nippers.

to sour. An ample amount of clean water is essential. Ranting boars are often difficult to handle. They sometimes become more quiet if a barrow or a bred sow is kept with them.

Boars often fail to settle sows if they have been kept on a grain ration in a dry lot without receiving alfalfa or some green feed. It is very important, therefore, to supply them with a well-balanced diet made up of a variety of feeds.

None of the grains fed alone is so desirable as a combination of grains and one cannot prescribe a definite combination for all boars. Boars are very individualistic and must be fed and managed on the basis of their individual peculiarities. The ration should be varied from time to time. Changes in the feed should be made slowly. Over-feeding is worse than under-feeding as it invariably throws them off feed. The boar should not be too fat. To have the boar too thin is also bad. Either condition may impair his breeding ability. When the young boar is on pasture, he should be fed enough concentrates to allow him to grow normally. The mature boar will require only about one pound of concentrates each day for each 100 pounds of body weight when he is in pasture and not in service. He should be fed enough to prevent his losing weight in the breeding season. In fact, he should be gaining a little. A variety of home-grown grains, with skim milk, shorts or tankage and green feed, if available, will give good results during the breeding season. Give him one-half pound of salt with each 100 pounds of grain feed.

When the boar is not in service he may be fed one of the following rather simple rations:

RATION 1	Parts by Weight
Barley, wheat or corn	1
Skimmilk	1
Forage or alfalfa hay	

RATION 2	Parts by Weight
Barley, wheat or corn	95
Tankage	5
Forage or alfalfa hay	

It is almost impossible to make up a ration for a boar in service that will prove adequate for the entire season, as it seems that changes are often necessary to keep him on feed. The following rations are suggested because they have been found, in general, satisfactory.

RATION 1	Parts by Weight
Barley	1
Wheat	1
Oats	1
Skimmilk	6
Forage or alfalfa leaves	

RATION 2	Parts by Weight
Barley	20
Oats	5
Wheat	5
Shorts	5
Corn (yellow)	5
Tankage	2
Forage or alfalfa leaves	

Skim milk may be substituted for tankage in ration 2 at the rate of 12 to 15 pounds of skim milk for each pound of tankage. Corn is very palatable to swine. It is, therefore, often desirable to have some available to use in boar rations. In corn producing sections in the state corn may be substituted for the cereals, at least in part.

The feet of boars, especially heavy boars, should be trimmed back to

prevent them from being broken off as they often are in the breeding season. Some boars are useless until such injuries are healed. If the feet are trimmed so short as to expose the "quick" they will become tender.

Questions

1. Why is it important to use a boar that is superior to the sows?
2. What characteristics are desirable in a good boar, and how do we know that these are important?
3. How would you manage a young boar during the breeding season?
4. Why is it important to use a variety of feeds for boars? How would you feed and manage a boar that has gone off feed?
5. What feeds are ordinarily used for boars during the breeding season?
6. How would you feed and manage a "ranting" boar?
7. Is it necessary to keep the feet of a boar in good shape? Why?
8. How much dry feed will a mature boar that is normal in condition need when he is on good forage and is not in active service?

Lesson III

Food Nutrients for Swine

THE VALUE of a feed is determined primarily by the amount of digestible nutrients it contains as well as upon its adaptability and palatability to swine. These nutrients are protein, carbohydrates, fats, minerals, and vitamins. **Protein** is necessary for developing muscle. **Carbohydrates and fats** are essential for providing heat or energy to the body and are stored as animal fat. **Minerals** contribute to the growth of the bony structure of the body and also contribute to the performance of important body functions. **Vitamins** are necessary for growth, reproduction, and for the animals' general vitality.

Inasmuch as the feed cost of producing pork constitutes from 75 to 80 per cent of the total cost it is obvious that one should give much attention to feeds. Practically all of the feeds used should be home-grown. Purchased feeds should contain as large a percentage as possible of the particular element that is lacking in the home-grown feeds. This element is usually protein. It also should be an animal protein. Some ready mixed feeds may run rather high in protein but the bulk of it may be vegetable protein that can be found in home-grown feeds.

Home-grown feeds vary considerably in their nutritive value. These variations are shown in Table I. In this table are found differences in the protein, carbohydrate and fat content of a number of feeds that are used in swine production. In the last column to the right is found the nutritive ratio of the feeds. Since feeds are usually compared on the basis of their nutritive ratio it is well to know just what it represents. In the table we find the nutritive ratio of barley to be 1:7.8 which means that if we give the value of 1 to the amount of digestible crude protein (9.0) in 100 pounds of barley the value of the carbohydrates (66.8) plus the value of the fat (1.6) would be 7.8. The carbohydrates and fats are combined because they serve essentially the same purpose. One pound of fat, however, has a value equal to 2.25 pounds of carbohydrates. In order to combine these two, therefore, they must be reduced to a common basis. This is done by multiplying 1.6 (the per cent of fat in barley) by 2.25, which gives 3.6. When we add 3.6 (the carbohydrate equivalent of 1.6 pounds of fat) to 66.8, the carbohydrates in barley, we get 70.4. When we divide 70.4 by 9.0 (crude protein) we find that 70.4 is 7.8 times as large as 9.0. The nutritive ratio is, therefore, expressed as 1 to 7.8.

The following recommendations for nutritive ratios of the grain feed are made merely as a general guide and are approximately correct when 50 per cent of the protein supplements used are from an animal source:

Growing pigs on a legume pasture	1:6.5
Fattening pigs in a dry lot	1:5.5
Brood sows in winter getting alfalfa hay	1:6.0
Brood sows during the sucking period on legume pasture	1:6.5

Nutritive Ratio of Mixtures. It is not quite so simple to find the nutritive ratio of a combination of feeds, at least when they contribute different amounts to the mixture. When any feed in a mixture makes up less than 100 pounds, the figures for the digestible protein, carbohydrates and fat in the table, which is given for 100 pounds of feed, must be divided

TABLE I

Composition of Some Common Feeds[1]

Kind of Feed	Total dry Matter in 100 pounds of feed	Digestible nutrients in 100 pounds of feed				Nutritive ratio of feeds[2]
		Crude protein	Carbo-hydrates	Fat	Total	
Concentrates						
Barley (Common)	90.7	9.0	66.8	1.6	79.4	1: 7.8
Corn (Dent)	89.5	7.5	67.8	4.6	85.7	1:10.4
Oats	90.8	9.7	52.1	3.8	70.4	1: 6.3
Peas (Field)	90.8	19.0	55.8	0.6	76.2	1: 3.0
Wheat (All analyses)	89.8	9.2	67.5	1.5	80.1	1: 7.7
Beans (Navy)	86.6	18.8	51.3	0.8	71.9	1: 2.8
Fish meal	89.5	40.1	——	8.3	58.8	1: 0.5
Linseed oil meal (O.P.)	90.9	30.2	32.6	6.7	77.9	1: 1.6
Soybean seed	90.1	33.2	24.7	16.1	94.1	1: 1.8
Tankage (60 per cent protein)	92.1	56.2	——	7.2	71.4	1: 0.3
Tankage (below 40 per cent)	90.9	34.3	——	14.1	66.0	1: 0.9
Wheat bran (all analyses)	89.9	12.5	41.6	3.0	60.9	1: 3.9
Wheat middlings (flour)	89.3	15.7	52.8	4.3	78.2	1: 4.0
Wheat middlings (standard shorts)	89.5	13.4	46.2	4.3	69.3	1: 4.2
Milk and Milk Products						
Cow's milk	13.6	3.3	4.8	3.6	16.2	1: 3.9
Buttermilk	9.4	3.4	4.9	0.1	8.4	1: 1.5
Buttermilk (dried)	88.3	29.3	41.0	6.2	84.2	1: 1.9
Buttermilk (semi-solid)	35.0	12.6	16.7	3.5	36.2	1: 1.9
Skimmilk (centrifuga.)	9.9	3.6	5.1	0.2	9.1	1: 1.5
Skimmilk (dried)	95.5	32.5	49.9	1.9	86.7	1: 1.7
Whey	6.6	0.8	4.7	0.3	6.2	1: 6.8
Dried Roughages						
Alfalfa hay (all analyses)	91.4	10.6	39.0	0.9	51.6	1: 3.9
Alfalfa leaves	93.4	17.3	35.9	3.0	60.0	1: 2.5
Roots and Tubers						
Beet, sugar	16.4	1.2	12.6	0.1	14.0	1:10.7
Carrot	11.7	1.0	9.1	0.2	10.6	1: 9.6
Potato	21.2	1.1	15.3	0.1	17.1	1:14.5
Green Legumes						
Alfalfa (before bloom)	19.9	3.5	7.5	0.3	11.7	1: 2.3
Peas (Canadian field)	16.6	2.9	7.1	0.3	10.7	1: 2.7
Soybeans (in bloom)	20.8	3.0	8.5	0.3	12.2	1: 3.1
Green Fodder from the Smaller Cereals						
Barley fodder	23.2	2.3	11.5	0.4	14.7	1: 5.4
Oat fodder (8 in. high)	13.0	3.4	4.1	0.5	8.6	1: 1.5
Rye fodder (5 in. high)	18.1	5.1	6.2	0.7	12.9	1: 1.5
Wheat fodder (5 in. high)	24.2	5.1	10.3	0.5	16.5	1: 2.2
Miscellaneous						
Apple	18.2	0.4	15.6	0.2	16.4	1:40.0
Apple pomace	23.3	1.2	15.6	0.8	18.6	1:14.5
Pumpkin (field)	8.3	1.1	4.5	0.5	6.7	1: 5.1
Rape	16.7	2.6	10.0	0.3	13.3	1: 4.1

[1]From Henry and Morrison's "Feeds and Feeding."
[2]This ratio is obtained by adding to the carbohydrates 2.25 times the amount of fat and dividing the sum by the amount of digestible crude protein.

by 100 and then multiplied by the pounds of this feed present in the mixture. Find for example, the nutritive ratio of the following mixture:

	Crude Protein	Carbohydrates	Fat
Barley, 100 lbs.	9.00	66.80	1.60
Wheat, 100 lbs.	9.20	67.50	1.50
Tankage, 16 lbs.	8.99	——	1.15
Alfalfa leaves, 10 lbs.	1.73	3.59	.30
	28.92	137.89	4.55

Applying the formula: Carbohydrates plus 2.25 times the fat, divided by the crude protein we get: 137.89 plus $(4.55 \times 2.25) \div 28.92$ or 5.1. Therefore, the nutritive ratio of this feed ration is 1:5.1.

Quality of Nutrients in Feed

There is considerable variation in the quality of nutrients in feed, that is not recognized in Table I. This is stressed more in connection with the proteins, minerals, and vitamins. The amount of protein may be the same in two feeds, yet the protein in one may be far less complete than the protein in the other. Proteins are made up of many different parts, some of which are essential to growth and others necessary for maintenance. Those elements in the proteins necessary for growth, for example, are largely absent in some feeds even though these feeds may be high in total protein.

Fig. 10.—These groups were fed well enough to make winners. The group of four barrows was champion pen at the Pacific International and the large group was the ton litter winner.

Fig. 11.—Grand Champion pen of barrows, Pacific International. Well finished, high quality, 200-pound barrows.

One should, therefore, make up a ration of different kinds of feeds so as to insure a balanced supply of protein. Proteins from an animal source, such as tankage and skim milk are important for this reason.

Minerals. It is not very likely that prepared minerals are very necessary when alfalfa forage, skim milk, and tankage are used. For best results in the winter time, alfalfa hay or alfalfa leaves must be a part of the feed. When additional minerals are preferred one may use a simple inexpensive formula of equal parts of finely ground limestone, steamed bone meal, and common dairy salt.

If you are in an area where pigs are born hairless, then add to each 100 pounds of the mineral mixture about one-third ounce of potassium iodide. The above mixture may be self-fed when pigs are accustomed to it. It may be fed at the rate of one pound with each 100 pounds of grain.

Salt. Large quantities of salt will kill pigs when they are not accustomed to it. Feed one-half pound of dairy salt with each 100 pounds of grain.

Vitamins. Green feeds, especially alfalfa, are, as a rule, high in vitamins. Vitamins are found also in well-cured, green-colored alfalfa hay, and in milk and milk by-products. These are important for growth, and for carrying on vital processes. Rickets cause the pig to be lame in the rear quarters, and often he may break down completely in the rear quarters. Rickets can usually be prevented by feeding alfalfa hay or leaves to the extent of 5 per cent of the ration.

Medicine for Pigs. Very often we see advertisements of tonics and condition powders for hogs. These remedies are worthless in most instances unless they supply some food material such as salt, calcium, or vitamins. It is not advisable to pay out good money for patent remedies and "cure-alls" when satisfactory simple food supplements are available. If your hogs need minerals, use the combination recommended above. If the hogs need vitamins, which they must have, use the natural sources of

the vitamins already described. If the pigs need worming, use a safe drug of proved value, (see "Worms") or if the hogs need a laxative use one ounce of Epsom salts in the feed for each 100 pounds of weight.

(See list of publications at the end of the Bulletin for additional information on feeding).

Questions

1. Name the important nutrients found in feeding stuffs.
2. To what use is each put in the animal body?
3. Why should you be careful in selecting feeds?
4. What do you understand by the nutritive ratio of a feed?
5. How do you find it for a single feed?
6. How do you find it in a mixture composed of a number of feeds?
7. Is the protein of wheat the same as the protein in corn or oats?
8. Why is it safest to supply proteins by using more than one feed?
9. What is a safe amount of salt to feed?
10. When you buy protein feeds, why should you make it a point to buy animal proteins?

Lesson IV

Feeds Generally Available for Swine

BARLEY can be fed successfully in all phases of swine production. It should always be ground and supplemented with protein supplements. Pound for pound it is worth about 12 to 15 per cent less than wheat. It may well serve as the only grain when properly supplemented with protein feeds.

Wheat is a common feed for swine in Idaho. For general hog feeding it is somewhat superior to corn. In common with corn and other cereals, however, it should not be fed alone. Pigs that have been grown out well and weigh around 150 pounds can be finished rather satisfactorily on wheat alone. However, much better results are secured when skim-milk, tankage, alfalfa forage, or alfalfa leaves are supplied. Grinding wheat increases its value 15 to 20 per cent.

Oats have no superior for growing pigs, and ground oats may be fed to the extent of 50 per cent of the ration. For very young pigs oats have too much fibre. Oats are high in protein and ash.

Corn is excellent for supplying carbohydrates, which furnish heat and energy, and for the production of fat. There are many things necessary for the growing pigs that are not found in corn, however, which must be supplied through protein supplements such as tankage, fish meal, skim milk, alfalfa and others listed in Table I.

Peas are used with success as part of the ration for swine. They can be fed ground to the extent of about one-third of the ration. When fed alone the hogs often go off feed and they tend to gain slowly. Peas are hogged-off successfully.

Shorts are commonly used for hogs and are especially desirable for brood sows and young pigs as they are high in protein. For best results, they should not comprise more than 35 per cent of the ration and should be fed with other protein supplements. They should not be fed as the only supplement with wheat as their proteins are obviously from the same vegetable source.

Skim milk is very valuable as a feed for growing pigs, brood sows, and also for fattening pigs in the dry lot. When used as the only protein supplement in the dry lot, about two pounds of skim milk should be fed with each pound of grain. If the pigs are on pasture, one-half this amount is satisfactory. Skim milk proteins are very excellent for growing pigs. Skim milk may be fed sour or sweet but it should be used consistently in one form only, as using it sweet part of the time and sour part of the time often causes digestive troubles in pigs. Keep all containers clean.

Tankage is made from meat scraps and bones and is very high in mineral matter and protein. It is so high in protein that only a small amount is necessary. It usually pays to buy the 60 per cent tankage as the transportation charge is less per pound protein than it is for lower grades. Tankage, however, should not be valued entirely for its protein content because grades with a lower protein content are usually higher in fat (See Table I in Lesson 3). Some of the grades with a lower protein content are very satisfactory and at times are more economical.

Fish Meal may be used in place of tankage and the choice between fish meal and tankage will depend upon the cost of each. The price should be the same.

Dried Buttermilk will run less than 40 per cent in protein as a rule. However, the protein in buttermilk is excellent. It may be used as a substitute for 60 per cent tankage when its price does not exceed that of tankage.

(For a more complete discussion of these and other feeds see Idaho Extension Bulletin 101, *Swine Husbandry in Idaho.*)

Pastures

A good pasture crop should be considered essential in any swine production program. It will reduce the grain requirement about 20 per cent for pigs on full feed. It will reduce the grain requirement more if less than a full feed of grain is fed. Pigs cannot develop normally on pasture alone; some grain should be fed. Pastures will keep the pigs thrifty and growing. When pigs have been developed on pasture and grain they will do better after they are placed in the dry lot for finishing than they would if they had not been developed on pasture. Fresh pastures help keep down

Fig. 12.—These groups were fed by members of 4-H Pig Clubs and were winners in their districts. Home-grown feeds were used.

pig parasites, concerning which we shall say more under the general topic of sanitation.

Alfalfa has no superior as a pasture crop wherever it can be grown successfully. However, if it cannot be grown with success, wheat, oats, peas, and other crops afford good pasture. The important thing is to supply some kind of green feed. If a pasture is not available, cut green feed for the growing pigs and the brood sow. When pigs are on a good pasture, they require in general only about one-half as much protein supplement as when they are in the dry lot. A pasture crop should be a heavy yielder of high quality forage that has a long growing season.

(See list of publications at the end of this Bulletin recommended for further study).

Questions

1. Is corn, wheat, or barley when fed alone a good ration for pigs? Why?
2. What important feed elements are low in the cereals?
3. Name some good supplements to grain and tell why they are desirable.
4. Why should you use home-grown feeds as much as possible?
5. Why should shorts not be used as a supplement for wheat?
6. Why should the small cereal grains be ground for pigs?
7. Why are pastures important?
8. Name some good pasture crops and give reasons why they are good.
9. How much grain will pasture replace when pigs are on a full ration?
10. Why should grain be fed when pigs are on pasture?

Lesson V

Care of the Brood Sow from Breeding to Farrowing

THE SOW must have proper food, ample exercise, and comfortable shelter. She should not be fed wheat, barley or corn alone, for none of these fed alone, or combined, contain enough protein or minerals to make it possible for her to develop a good strong litter of pigs. At the Idaho Agricultural Experiment Station it was found that gilts fed peas alone—and peas are much higher in protein than grains—farrowed pigs 25 per cent lighter in weight and 20 per cent lower in vitality than gilts that received a mixture of feeds and alfalfa hay. A normal pig should weight about 2½ pounds when it is born. (See Idaho Station Circular No. 48 for full discussion.)

Suggested Feed Combinations for Wintering Bred Sows

RATION 1

	Parts by Weight
*Barley	1
**Skimmilk	1
Fine alfalfa hay in rack	

RATION 2

	Parts by Weight
Barley	16
Oats	6
†Tankage	1
Fine alfalfa hay in rack	

RATION 3

Barley	1
Wheat	1
Oats	1
Skimmilk	3
Fine alfalfa hay in rack	

RATION 4

Barley	16
Oats	8
Shorts	4
Tankage	1
Fine alfalfa hay in rack	

RATION 5

Barley	8
Peas	2
Skimmilk	6
Fine alfalfa hay in rack	

RATION 6

Barley	16
Oats	8
Peas	3
Tankage	1
Fine alfalfa hay in rack	

Amount to Feed. The sow should be fed just enough to stay in good thrifty condition. Sows that are too fat are sluggish, and if they are too thin they ordinarily do not give enough milk to properly nourish their pigs. If the sow has access to good alfalfa hay or to alfalfa pasture, she will rarely need more than 1½ to 2 pounds of grain each day for every 100 pounds of live weight. A 300-pound sow should not require more than about 6 pounds of grain each day when she is getting all the high quality alfalfa hay she will eat.

About a week before the sow farrows it is well to add bran to the ration as it is rather laxative. One-third of the ration may be made up of bran during this period. The grain allowance also may be reduced by one-fourth to one-half.

Hog Lice. When the club member becomes the owner of a gilt or a sow, he should inspect her for lice or mange. Hog lice are quite large and

*Wheat or corn may be substituted for barley.
**When tankage is used to replace skimmilk figure one pound of tankage (60 per cent) equivalent to 15 pounds of skimmilk.
†Fishmeal may be substituted in equal amounts for tankage, and if linseed oil meal is used as part of the supplement, two pounds should be allowed for each pound of tankage.

Fig. 13.—Eating alfalfa hay from a rack is a means of getting exercise as well as important food constituents for the pregnant sow.

are found back of the ears and in the flanks where the skin is thin. Mange is caused by mange mites. Mange is not common in Idaho. The application of any of the coal-tar-creosote stock dips, according to directions given on the container, will eliminate the lice. The solution may be applied with a brush. Two or three applications at two-week intervals are usually recommended. If the other hogs on the farm are affected they also should be treated. Complete directions and methods of application are given in Farmers' Bulletin No. 1085, *Methods of Control and Eradication of Hog Lice and Hog Mange*, by the U. S. Department of Agriculture, Bureau of Animal Industry.

Exercise. A sow that eats alfalfa hay from a rack usually gets considerable exercise. It may also be necessary to feed her some distance from her sleeping quarters. Undoubtedly, the best way is to keep her on pasture when that is available. She must have exercise in order to produce thrifty pigs.

Shelter. The sow's shelter need not be elaborate. It must, of course, be comfortably warm, free from excessive drafts, clean, well lighted and kept supplied with clean, dry straw—wheat straw preferably. Observe the comforts provided by the "A" type field house described in this Bulletin. (Fig. 27).

Preparation for Farrowing. A few days before the sow farrows she should be put in a place by herself so she will not be disturbed by other hogs. The house should be thoroughly cleaned of filth, then scrubbed with a solution of boiling water and lye (1 lb. of lye to 20 gallons of water) and allowed to dry before the sow is moved in. She should be washed with luke warm water and soap before being moved into the pen. Avoid chilling the sow if it is a cold day. These sanitary precautions are essential to prevent the young pigs from contracting infections, scours, or cocci-

diosis, and to eliminate the chance of the pigs getting worms. Parasite eggs and disease producing germs present in the filth on the gilt's udder and in the house are thus prevented from getting into the young pigs. (See "Worms and and Worm Treatment").

Sometimes farrowing takes place even sooner than 112 days after the gilt is bred so it is well to watch her closely. She will probably warn you by getting her bed ready and by her desire to be left undisturbed. (See list of publications at end of Bulletin recommended for further study).

Questions

1. At what age may a gilt be bred?
2. To what kind of a boar should she be bred?
3. What are the food requirements of a bred sow as to quality?
4. How much grain will a bred sow require each day when she is getting alfalfa hay or when she is in pasture?
5. What are some desirable rations for a bred sow?
6. Discuss the importance of exercise.
7. What are the requirements of a good shelter?
8. How should you prepare a sow for farrowing?

Lesson VI

Swine Sanitation

TO BE SUCCESSFUL, every club member must know something about swine diseases and swine sanitation. Each member is responsible for the health of his gilt and her litter of pigs. This lesson will deal with the common diseases of swine and methods of controlling them.

Disease Causes. Many young pigs die of diseases such as scours and anemia before they are three weeks old. These diseases are discussed in your next lesson.

Many older pigs die or become runts because of infections and parasites picked up in old hog lots and dirty houses. "Necro", a very common disease of pigs reared in old hog lots may cause sores of the mouth, nose, and intestines, or even the skin. Coccidiosis causes diarrhea and occasionally death in growing pigs. It causes bleeding from the intestines and makes the pig a poor feeder and a runt.

Worms. Round worms, lung worms, and other intestinal worms are picked up in old hog lots and dirty feeding equipment. These worms cause great damage to the internal organs of the pigs and may even cause death. Most runts are the result of harboring some of these diseases or parasites.

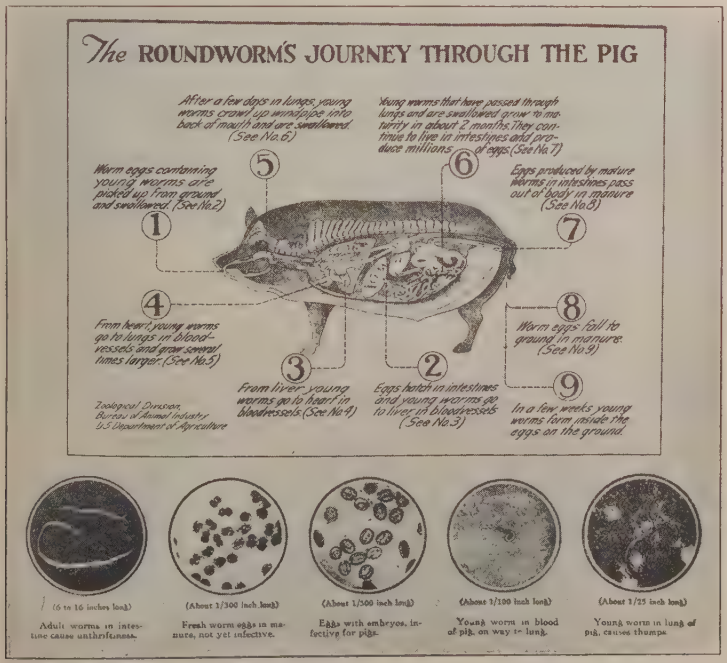
The ROUNDWORM'S JOURNEY THROUGH THE PIG
After a few days in lungs, young worms crawl up windpipe into back of mouth and are swallowed. (See No. 6.)
Young worms that have passed through lungs and are swallowed grow to maturity in about 2 months. They continue to live in intestines and produce millions of eggs. (See No. 7.)
Worm eggs containing young worms are picked up from ground and swallowed. (See No. 2.)
Eggs produced by mature worms in intestines pass out of body in manure. (See No. 8.)
From heart, young worms go to lungs in blood-vessels and grow several times larger. (See No. 5.)
Worm eggs fall to ground in manure. (See No. 9.)
From liver, young worms go to heart in blood-vessels. (See No. 4.)
Eggs hatch in intestines and young worms go to liver in blood-vessels. (See No. 3.)
In a few weeks young worms form inside the eggs on the ground.
Zoological Division, Bureau of Animal Industry, U. S. Department of Agriculture
(6 to 16 inches long)
Adult worms in intestine cause unthriftiness.
(About 1/300 inch long)
Fresh worm eggs in manure, not yet infective.
(About 1/500 inch long)
Eggs with embryos, infective for pigs.
(About 1/100 inch long)
Young worm in blood of pig, on way to lung.
(About 1/25 inch long)
Young worm in lung of pig, causes thumps.

Fig. 14.—The roundworm's journey through the pig. (Courtesy U. S. Department of Agriculture).

The common round worm of pigs is from eight to twelve inches long and is found in the intestines of the pig. Each female worm lays as many as 100,000 eggs. These eggs pass out into the hog lot with the feces and after two weeks or longer are ready to develop into more worms. If a little pig picks up these worm eggs, it will surely have worms and will probably become a runt or may even die. If round worm eggs are present in the hog lot, other worm eggs and most filth borne disease germs will probably also be present. If we can prevent young pigs from getting these worm eggs, we can prevent them from becoming runts.

Hog Lot Sanitation

Some of the farmers and some club members in Illinois worked out a plan to prevent pigs from getting worms because they were losing too many pigs and feeding too many runts.

Profits from Sanitation. These farmers and club members raised 13,478 pigs from 1,977 sows on 154 farms using this new system of hog

Fig. 15.—A feeding floor is desirable. Not only does it keep the feed out of the filth, but it saves feed.

lot sanitation. They raised over 98 out of every 100 pigs saved at farrowing time. This system saved money for them in these ways:

First, each sow raised two or three more pigs when this system was followed.

Second, this hog lot sanitary program reduced the number of runts from 18 in 100 by the old system to only 1 runt in 100 pigs. There is no profit in a runt.

Third, the sanitary system pigs were marketed seven weeks earlier and weighed twenty-eight pounds more than the other pigs. This saved feed and the pigs went in on an early market.

Sanitary Practices. How was it possible for them to get these results? You can do equally well if you will carry out the following four suggestions with your sow and litter:

First, follow the directions in Lesson IV for cleaning the far-

rowing house and washing the sow. This gives the pigs a clean nest and their meals from a clean source.

Second, be sure to place the farrowing house on a good clean dry piece of pasture. A clean pasture is one that pigs have not been on for at least one year. Never use an old hog pen for little pigs. An alfalfa, pea or clover pasture is ideal.

Third, be sure that the pigs cannot get back to the barn yard or old hog lots for if they do they will pick up worm eggs and become infested.

Fourth, keep the house and feeding equipment clean. Move the feed troughs weekly to a new clean place. These hog disease germs and parasite eggs accumulate where hog manure collects, so move the feeders to get away from the filth.

These four practices prevented disease and made money for the Illinois boys. They will do as much for you.

Any time a pig gets sick or becomes a runt, we suspect that it has worms. It probably has round worms, lung worms, or kidney worms as well as coccidiosis and "necro". Most hog raisers want to treat such hogs for worms. Never use patent medicines for treating diseases of pigs. Round worms may be eliminated by using a satisfactory remedy. However, there is no satisfactory treatment for lung worms, coccidiosis or "necro". A good round worm treatment may, therefore, not cure a sick or runty pig. Sanitation is the only safe method of controlling these hog diseases and parasites. Call your local veterinarian or county agent for advice.

If you have not followed a sanitary program and the pigs have worms, use the following remedy:

Round Worm Treatment

1. Fast animal for 18 hours.
2. Treat with individual doses using a dose syringe or table spoon.
3. Mix one ounce oil of chenopodium with one pound of castor oil.
4. Give one ounce (two tablespoonfuls) of the mixture to 50-pound pigs and two ounces for 100-pound pigs. For larger animals, use more castor oil up to three or four ounces, but do not increase the oil of chenopodium.

The use of tetra-chlorethylene in the treatment of hogs for worms is somewhat less effective than the above, but is used quite generally. This drug is sold under trade names in two and five cubic centimeter capsules with directions. They should be given after 18 hours fasting and should be followed in four hours by a laxative. (See U. S. Department of Agriculture, Leaflet No. 5, *The Prevention of Round Worms in Pigs.*)

Hog Cholera. If hog cholera is prevalent in your locality, consult your leader or local veterinarian for advice.

Tuberculosis. Many pigs in Idaho have tuberculosis. Most often they contract it from chickens affected with avian tuberculosis. Recently 33 out of 39 pigs butchered at the Moscow United States inspected packing plant had chicken (avian) tuberculosis. Do not obtain your gilt from a farm where the chickens have tuberculosis and do not let such chickens get near your young pigs. You have already learned that your gilt should

be free from lice and mange. Further information concerning hog diseases may be found in Idaho Extension Bulletin No. 101.

Questions

1. What diseases cause the death of young pigs?
2. What are some of the diseases of older pigs?
3. How do young pigs get round worms?
4. What are the three advantages of Hog Lot Sanitation?
5. What are the four sanitary points to follow in rearing young pigs?
6. Why is hog manure dangerous for young pigs?
7. Describe a good worm remedy for pigs.

Lesson VII

Care of Sow and Litter From Farrowing to Weaning

IN A PREVIOUS lesson you have read about the comforts that are desirable in the shelter for a bred sow. During farrowing these same requirements should be sought. The house should, however, be provided with a farrowing rail which aids materially in protecting the pigs. The farrowing rail should be 8 to 10 inches from the floor and 8 inches from the walls. In Fig. 18 you will find a farrowing rail that is in common use. You will find in this same figure a "pig nest" built across the corner over the farrowing rail in which the pigs find additional comfort in chilly weather. This cover is straw loosely laid over board slats so as to allow ample ventilation.

Bedding. Wheat straw that is dry, clean and rather short is preferable. The bed should be kept dry. Change the straw when necessary. In

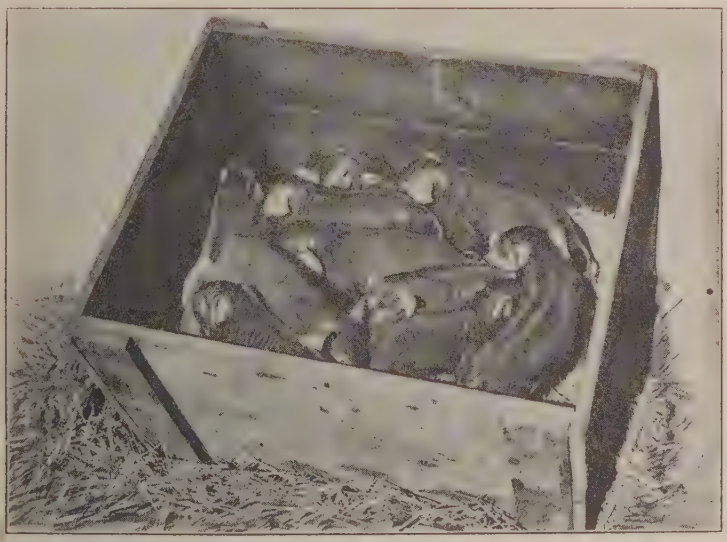

Fig. 16.—When pigs are dried off with a burlap bag and placed in a box immediately after they are farrowed they may be spared from chilling. Whenever necessary a burlap bag may be placed over the box and a jug of luke warm water may also be placed in the box. Allow some ventilation.

rainy weather, it may be necessary to make a change each day. To begin with, the bedding should be used sparingly so the little pigs will not become entangled in it and fail to get around conveniently.

Farrowing. The sow should not be disturbed during farrowing. If she needs help, obviously that should be supplied with the least disturbance. In cold weather it is well to have a box about 2 feet square, with tight walls, or the lower half of a barrel, in the bottom of which have been placed some warm bricks. A jug of warm water can also be used. The

bricks are covered with dry, clean straw. As the pigs are farrowed, they should be dried with a burlap bag, and the mucus removed from their mouths. They are then placed in the barrel or box (Fig. 16). The top may be partly covered with a burlap bag. The barrel should not be covered so as to shut out all ventilation. The pigs may be kept in the barrel and

Fig. 17.—It requires, under normal conditions, the profit from four pigs to pay for the cost of keeping the sow. The small litter in this figure just pays the cost of production. The fifth pig is the first pig that returns a net profit. Save six pigs and you have doubled the profit. What will ten pigs do? The number of pigs saved per litter has an important bearing upon the profit made on the litter.

allowed to nurse every two or three hours until they can get along with the sow. The afterbirth should be removed from the pen as soon as it is expelled.

Feeding After Farrowing. It is not a good policy to give the sow anything but water for twenty-four hours after she farrows. Usually a sow does not come for food until the second day. Feed her lightly for a few days. Too much feed at this time may cause constipation in the sow. It may also stimulate too big a milk flow for the pigs when they are very young. Both of these conditions may cause digestive disturbances in the form of scours in the pigs. A ration containing some shorts is in order at this time as it is somewhat laxative. The sow is usually on full feed when the pigs are 10 to 15 days old. The pigs are then old enough to take all the milk she produces. Scours, or diarrhea, of young pigs is also caused by lack of cleanliness at farrowing or dirty wet quarters following farrowing. Scours may occur any time during the first month of life. It is most severe in pigs during the first week of life. Many pigs die of scours. Some pigs that recover become runts. If scours develop, the house should be cleaned and bedded daily. Affected pigs should receive a laxative. One teaspoonful of castor oil or raw linseed oil for each pig

under one week of age is satisfactory. Two or three teaspoonfuls should be given to older pigs. One teaspoonful of the following powder may be given to each affected pig daily if they persist in scouring: sodium bicarbonate, 4 parts; bismuth subnitrate, 2 parts; salol, 1 part.

Exercise for the Pigs. When the pigs and sow are located in a pasture, the sow usually gets the pigs out when they are from two to three days old. If they are confined in smaller quarters, some means should be provided to get them to take exercise. The will often play with a rag, burlap bag, or an inner tube. Whatever means is provided, one should make sure that there is no infection introduced.

Thumps. Thumps is a symptom of some respiration disturbance. Pigs showing this symptom breathe with difficulty and often breathe rapidly and spasmodically. The disease often responsible for the development of thumps is anemia. Pigs suffering from pneumonia often show the same

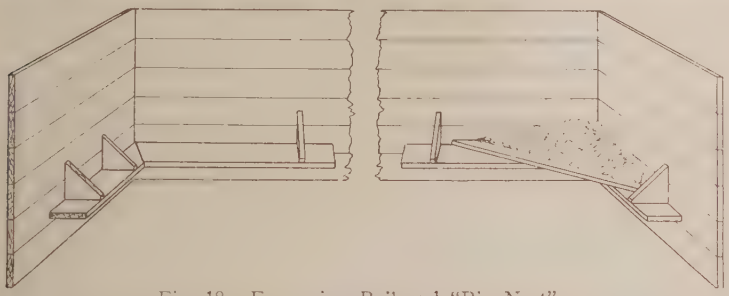

Fig. 18. Farrowing Rail and "Pig Nest".

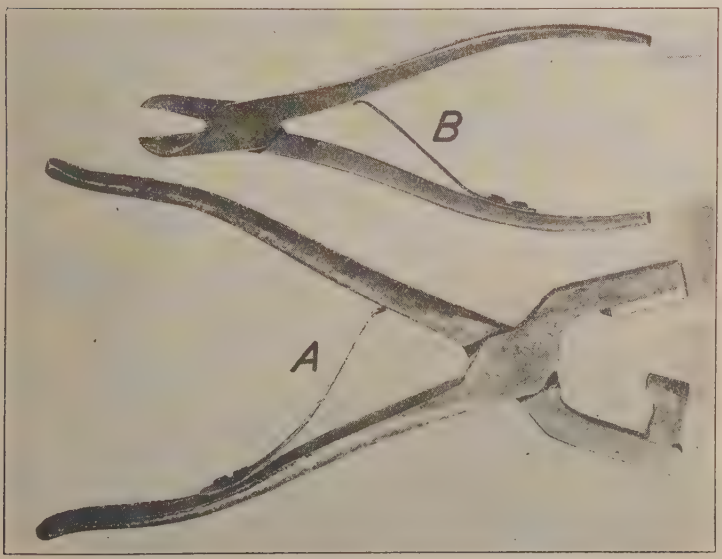

Fig. 19.—**A**. Ear Notcher. **B**. Needle teeth nippers.

symptom. The common round worms are often responsible for pneumonia since they pass through the lungs in their development. (See Lesson V.) Lungworms may also be responsible for this disease.

Anemia. This is a disease of little pigs and occurs most often in the early spring and late fall litters. It is caused by a deficiency of iron in the milk of the sow and the inability at such seasons for the pigs to get supplementary feed. Pigs farrowed at pasture rarely develop this disease. It is very common to see fat, two or three weeks old pigs that are short of breath and inactive, die of anemia. Some such pigs may survive only later to develop into runts. It is effective to supply them with clean sod or soil which they will eat when about five days old. At this age they do not eat much dirt. They nibble away at it, however, and seem to get enough to prevent anemia from developing. In iron deficient areas one can sprinkle on the clean soil or sod small quantities of a solution made up of one pound of a mixture of 17 parts of iron sulphate and three parts of copper sulphate dissolved in one-half gallon of warm water.

Needle Teeth. In their little combats for feeding position pigs sometimes will cut the sow's teats with their sharp needle teeth which are long and tusk-like. They often make sores on one another which may become sources for infection. These may be broken off with nippers such as the pair marked "B" in Fig. 19. Do not leave sharp points if the teeth are cut as they are more harmful than the whole tooth.

Marking the Pigs. If your pigs are purebred, you may desire to mark them so you can identify them later on. This can be conveniently done by use of the ear notcher "A" in Fig. 19. In Fig. 20 you will find a practical system for marking pigs. Notches may be made with an ordinary pocket jack knife. The notches should not be made too deep, as deep notching often affords an opportunity to tear.

Creep. When the pigs are about three weeks old they will commence eating. Some feed should be supplied in a clean trough inside a creep. Fig. 22 will give an idea of how to construct a creep. The posts need not be dimension lumber and the size may be changed to suit one's desire. The standard width for creep openings is 8 inches. However, when only one pasture lot is available for the sow and litter during the summer, it is de-

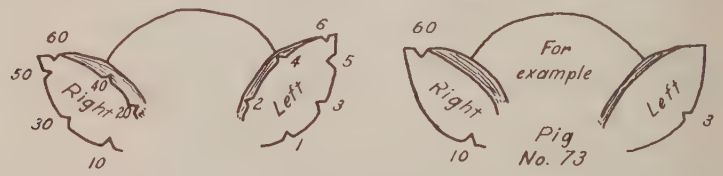

Fig. 20.—At left: Value of notches in right and left ears. At right: Ears notched to indicate No. 73.

	Left Ear	Right Ear
Lower side, next to head	1	10
Lower side, midway from tip to base of ear	3	30
Lower side, tip of ear	5	50
Upper side, next to head	2	20
Upper side, midway from tip to base of ear	4	40
Upper side, tip of ear	6	60

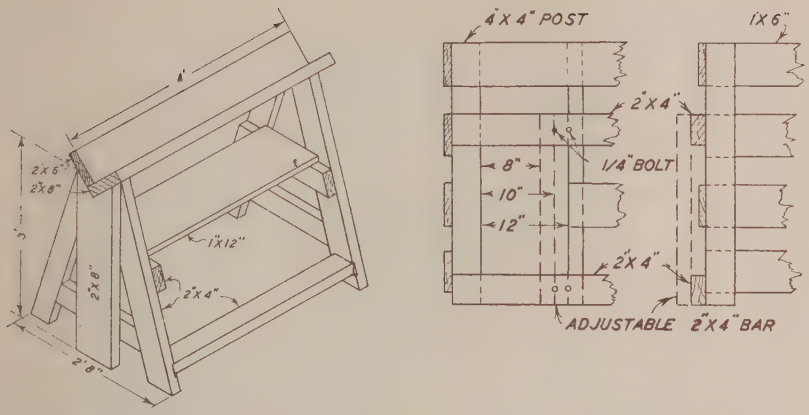

Fig. 21.—Convenient castrating trough.

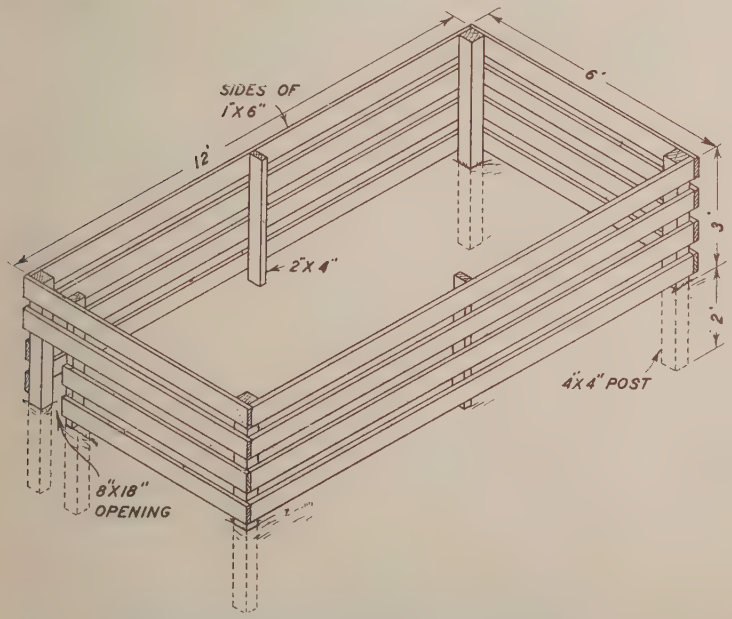

Fig. 22.—A practical pig creep, and (upper right) an adjustable opening.

sirable to use the creep for an extended period. When this is done the adjustable opening in Fig. 22 may be used. This simple plan makes it possible to have openings of 8, 10 or 12 inches by simply moving a piece of 2 x 4 which is bolted at either end by a ¼-inch bolt.

Ground wheat or shelled corn with skim milk may be fed the pigs at first. Later, when they take to their feed in good shape, a mixture of

ground barley 10 parts, shorts, 26 parts, and tankage, 4 parts may be fed. Milk is a very superior feed for pigs. It should be fed sweet. However, if it cannot be fed sweet every time, it should be fed sour all the time. Keep it in clean containers. The feed should not be allowed to sour in the trough. A little attention at this point will help to avoid indigestion in the pigs.

Feeding Orphan Pigs. It is natural for pigs to nurse often. If it becomes necessary to raise pigs as orphans, feed small amounts of whole cow's milk, that has been warmed to about 100 degrees Fahrenheit, six or seven times a day. It may be necessary at first to feed the orphan pig with a nipple. He can soon be taught, however, to drink from a pan. Clean, sweet whole cow's milk that has not been scorched in heating is essential for success. It is not well to overfeed. Young pigs require exercise and they will play around more if they are slightly underfed than if they are overfed. If the pig is just a few days old, he will take from 2 to 3 tablespoons of milk at a feed 6 to 7 times a day. If he does well, it will be necessary to increase this amount very soon. In about three weeks, he will eat some grain and will require about 1 pint of milk a day. The grain should not be allowed to become sour in the trough. Keep all feed clean, and provide the pig with a well ventilated dry pen which is kept properly bedded with clean dry straw. Admit to the pen all the sunlight that it is possible to admit.

Rations for the Sow. Sows lose weight as a rule at the rate of about three-fourths of a pound a day when they are suckling the pigs. Heavy milkers will lose more. When the pigs are from ten days to two weeks old, the sow should be on full feed and be given all she will clean up. If she loses weight too rapidly, feed her three times a day. Any one of the following rations may be used:

RATION 1*

	Parts by Weight
**Barley	100
Shorts	25
†Tankage	4

RATION 2

	Parts by Weight
Barley	100
Peas	20
Tankage	4

RATION 3

Barley	100
Wheat	100
Tankage	12

RATION 4

Barley	100
Oats	50
Shorts	25
Tankage	8
Or skimmilk	120

Castration. All male pigs, unless there is an exceptional boar pig in the litter, should be castrated when from 6 to 8 weeks old. They will then be healed when they are weaned two weeks later. In some clubs a day is set aside when the members get together to castrate all the pigs belonging to the members of the club. The club leader usually supervises the party and instructs in the castration methods. When this group arrangement is worked, a castrating trough, such as the one in Fig. 21, is

*Before the sow gets out on pasture, add alfalfa leaves to the extent of 5 per cent of any ration selected.
**Barley, corn or wheat may be used.
†When skim milk is available, use 12 to 15 pounds in place of each pound of tankage or fishmeal.

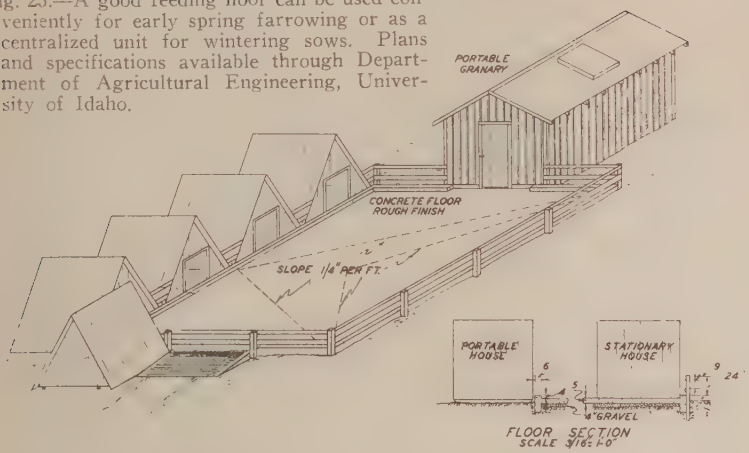

Fig. 23.—A good feeding floor can be used conveniently for early spring farrowing or as a centralized unit for wintering sows. Plans and specifications available through Department of Agricultural Engineering, University of Idaho.

usually moved along to the different farms as its use will help to insure cleanliness. The pig is held on his back in the trough. The three per cent cresol solution that is used as a disinfectant is usually kept in a pan on the shelf of the trough. The instruments may also be kept in the solution. The hands of the operator should be clean. It is a commendable plan to keep the pigs away from wallows and filthy places at least till the wounds are healed.

Weaning. It is best to wean the pigs when they are from 8 to 10 weeks old by moving the sow away from the pigs and allowing them the use of the lot to which they are accustomed. They are very little disturbed when this is done. If the sow is a heavy milker, her feed should be reduced. Whole oats are excellent to feed the sow at this time. Usually the sow's feed allowance should be reduced, beginning a week before the pigs are weaned. The pigs now weigh about 35 to 40 pounds and are ready for the summer management on forage. (See publications at the end of this Bulletin recommended for further study.)

Questions

1. How is a farrowing rail built into the pen?
2. Discuss a method of taking care of new born pigs.
3. How should the sow be fed just before and after farrowing? Why?
4. Is exercise necessary for the little pigs? Why? How do you provide it? What are needle teeth?
5. Describe a system of marking pigs.
6. What are the advantages of a creep? How is it made?
7. At what age will a pig begin eating and what should it be fed?
8. What causes scours in little pigs?
9. How would you treat a pig with scours?
10. Discuss the feeding of a sow when nursing pigs.
11. What precautions are necessary to take in castrating pigs?
12. When and how should pigs be weaned?

Lesson VIII

Feeding the Pigs on Pasture

THE IMPORTANCE of forage is very evident when one recalls that it reduces the grain requirement for each 100 pounds of gain by about 20 per cent. The amount of grain to feed will depend upon the object in view. If the March farrowed pigs are to be marketed in August or the first of September, when the market is usually the highest, the pigs should be allowed all the grain they will eat. They will consume each day when on full feed, about four pounds of grain for each 100 pounds of live weight. A 50-pound pig will eat about 2 pounds of grain per day, and should gain about 1½ pounds per day. The less grain he gets while on forage, obviously the later he will be ready for market, and the later markets, are as a rule, lower. There is very little difference in the total amount of grain required to finish a pig for market while on forage whether he gets all the grain he will eat or one half as much as he will eat. Do not forget to add one pound of salt to each 100 pounds of feed mixture. The following rations are satisfactory for pigs on forage:

RATION 1

	Pounds
Barley	75
Oats	25
*Tankage	4

RATION 2

	Pounds
Barley	75
Shorts	25
Tankage	3

RATION 3

Barley	30
Wheat	30
Oats	20
Shorts	20
Tankage	2

RATION 4

Barley	30
Wheat	30
Peas	20
Oats	20
Tankage	2

TABLE II

Amount of Different Protein Supplements Required to Balance Barley for Pigs on Legume Pasture**

Protein Supplement	Parts by Weight		Nutritive Ratio
	Supplement	Barley	
Skimmilk (Centrifugal)	100	100	1:6.03
Buttermilk	100	100	1:6.09
Tankage (60 per cent protein)	5	100	1:6.03
Standard wheat shorts	50	100	1:6.26
Linseed-oil meal (o.p.)	12	100	1:6.04

The most economical gains on the basis of feed requirements for pound of gain, are made when the pigs are young. Table III will give you some information on the daily consumption of feed and feed requirements for 100 pounds of gain. All figures are in pounds.†

Some feeders prefer to feed pigs three times a day as they feel that this method tends to develop less paunchiness in the pigs than does feeding

*If skim milk is used in place of tankage, use 12 to 15 pounds of skim milk for each pound of tankage.

**Calculations based upon digestible nutrients—Henry and Morrison's "Feeds and Feeding." Approximately the same nutritive ratio will be obtained if wheat is substituted for barley.

†"Feeds and Feeding"—Henry and Morrison.

only twice a day. This point would probably be emphasized more in developing show barrows.

TABLE III

Weight of Pigs	Average feed eaten per day	Feed eaten daily per 100 lbs. live wt.	Average daily gain	Feed for 100 pounds gain
15-50	2.2	6.0	.8	293
50-100	3.4	4.3	.8	400
100-150	4.8	3.8	1.1	437
150-200	5.9	3.5	1.2	482
200-250	6.6	2.9	1.3	498
250-300	7.4	2.7	1.5	511
300-350	7.5	2.4	1.4	535

Self-Feeders. Pigs that are on self-feeders have a tendency to eat less forage than do those that are hand fed. Pigs should be on full feed before given access to a self-feeder. This method of feeding does not necessarily save grain. Its primary advantage lies in its labor saving feature. If there are any outstanding gilts in the litter that are to be developed as breeding gilts, they should not be kept on a self-feeder after they pass 100 pounds in weight or they may become too fat.

Rations for Fattening. If the pigs are finished while on forage it is well to study the protein percentage in the ration carefully. It would seem that as the season advances and the pastures become drier, and also when the pigs are being forced on grain, that more protein should be allowed than earlier in the season. However, if the pigs tend to grow too rapidly and not take on the desired finish, it is good practice to reduce the protein percentage and add palatability to the ration by using a larger variety of grain feeds in the mixture.

Fig. 24.—This is a practical shade when natural shade is not available.

Wallows and Shade. Wallows are, as a rule, of little service as they usually are difficult to keep clean. When the pig becomes covered with a thick layer of mud, which bakes on his back in the hot sun, he is worse off than if he had never had access to the wallow. Access to clean running water is another matter and is preferable. Natural shade is the very best kind of shade, as the air moves more freely under a tree than under an artificial shelter. If trees are not available, a cheaply constructed shelter such as the one in Fig. 24 is practical. On hot days the pigs should by all means have protection from the sun.

Water. Keep the pigs well supplied with fresh, clean water. It helps the pig's system to regulate the body temperature, to keep his bowels normal, and it is also essential for the normal body processes to carry on properly. Stale, warm water is very unsatisfactory for hogs.

Questions

1. Why is forage necessary for weanling pigs?
2. What are the advantages of a full grain ration when pigs are on forage?
3. Give some practical grain rations for weanling pigs.
4. Why are gains in young pigs cheaper than in the mature pigs?
5. What are the advantages of self-feeders?
6. In what way do fattening rations differ from growing rations?
7. Discuss wallows and shade.
8. Why is fresh water essential?

Fig. 25.—This pig is smooth and very uniform in his development and finish. The underline is neatly carried.

Lesson IX

Fattening Pigs in the Dry Lot

WHEN PIGS are farrowed late it is generally necessary to finish them in the dry lot. Early farrowed pigs also may have to be fed in the dry lot for a while. Pastures also may dry up early and shotes that are used for hogging off crops sometimes do not get the desired finish under field conditions.

The problem of finishing for the market thrifty hogs that have been fed liberally while on pasture is not difficult. As a rule, they retain a good appetite for a ration that is made up of a variety of feeds. After they are put on heavy feed, they are usually content to be confined in lots smaller than their pasture lot and usually they make acceptable gains when given a ration made up of feeds of different kinds. The basic feeds should be those that are of about the same price, such as the home grown grains. The protein supplements should be, in the main, from an animal source in the form of skim milk, tankage, or fishmeal.

A nutritive ratio of about 1:5.5 will be acceptable when one-half or more of the protein supplements are from an animal source. In the event one has a supply of alfalfa leaves available, it is well to mix small quantities of these with the grain ration. The following rations have a nutritive ratio of about 1:5.5.

RATION 1

	Pounds
*Barley	100
**Tankage (60 per cent protein)	6
Alfalfa leaves	5

RATION 2

	Pounds
Barley	100
Skimmilk	100
Alfalfa leaves	5

RATION 3

Barley	100
Peas	10
Tankage (60 per cent)	4
Alfalfa leaves	5

RATION 4

Barley	100
Shorts	10
Tankage	4
Alfalfa leaves	5

*Wheat or corn may be substituted for barley. If corn is used increase the tankage from 6 to 8 pounds.

**When skim milk or buttermilk is available, substitute 12 to 15 pounds of one or the other for each pound of tankage.

When fitting show barrows it is desirable not to use too bulky feeds. Ration 3, containing peas, is usually desirable. However, watch the pigs carefully to see if the peas bloat them. If they do, drop peas out and add shorts. In all of these rations skim milk may be substituted in part for the tankage. Too much skimmilk or buttermilk may develop too much paunch for show purposes. Your leader will be helpful in directing your efforts concerning this matter. When you are finishing show barrows give them some exercise so they will not become sluggish, and aim to have them finished for market as nearly as possible by the date of the show. It is somewhat annoying to have them finished for market some time before the show as they are so inclined to be lacking in "bloom" and often become "stale". Some fitters of show barrows prefer to use linseed meal (old process) with their tankage and skim milk as they contend that it helps the pig develop the desired "bloom". If this is done, two pounds of linseed meal may be substituted in each of the above rations for each pound of

tankage replaced. It is well not to replace more than one-half of the tankage. Do not forget to add one pound of salt with each 100 pounds of feed in all rations outlined in this circular and make sure that the pigs have plenty of clean cool water.

The details involved in marketing the fat hogs should be taken under advisement with the club leader.

Questions

1. Why are thrifty pigs rather easy to finish for market in the dry lot?
2. Why is a variety of feeds necessary for best results?
3. What is a desirable nutritive ratio for hogs in the dry lot?
4. Why is too much bulk in the ration undesirable?
5. What are some desirable rations?
6. Make up other rations than those in your lesson, using different grain feeds.
7. What special attention is important in fitting show barrows?

Lesson X

Equipment

HOGS should be kept comfortable by housing them in a warm, well ventilated, convenient house that admits ample light and especially sunlight. The house should be serviceable and well made. It need not be expensive. The "A" type field house in Fig. 27 meets the above requirements reasonably well. The ventilation is taken care of by means of the gable projections. In excessively cold weather a burlap bag may be used to close one of these ventilators.

Fig. 26.—Housing combination used in managing the swine herd on the University farm, Moscow. The central house in upper picture is a half monitor type with a feed house in the foreground. This house has individual accommodations for 22 sows. The two field houses in this group are used in conjunction with the central house. They are more fully explained later in this lesson.

The entrance platform is hinged to the house. This is important so hogs will not become injured when moving through the doorway. When the house is moved the platform can be raised and secured with the hook above the door opening. This house is not provided with a hinged door because such a door is seldom used, and very often broken down by the

hogs. The hurdle that is provided is convenient if one wishes to confine the occupants of the house. In cold weather a burlap blanket, which can be made by stitching together some burlap bags, may be suspended from the inside top of the doorway. A one-by-four inch strip, two inches shorter than the width of the doorway should be tacked to the bottom of the blanket. The weight of this will tend to keep the blanket in place even though the air is moving freely.

Note that the floor is laid parallel with the skids. This is done so as to make it possible to renew the floor when that becomes necessary. When the floor is laid in this direction usually only the center boards need replacement. Your club leader will be able to call to your attention further details in the construction. He will help you get the farrowing rail in place and instruct you with reference to details that will keep down the cost of construction. A house with eight foot dimensions affords one-third more floor space than a seven foot house at only a slight increase in the construction cost.

Field houses have some definite advantages over a permanent house. They can be moved to pasture that is free from disease infestation which is so dangerous to pigs. They can be made cheaply and increased in number as needed. In the winter they may be moved so as to make it necessary for the sow to walk farther to her feed. She needs exercise. Pigs squealing in a cot do not disturb other pigs as they often do in a central house. If the pigs have natural shade in the summer the house may be closed up. Floors wear rapidly and often unnecessarily in summer. The "A" type house is not cool in summer. Changes in the construction necessary to make it cool tend to make it much less permanent.

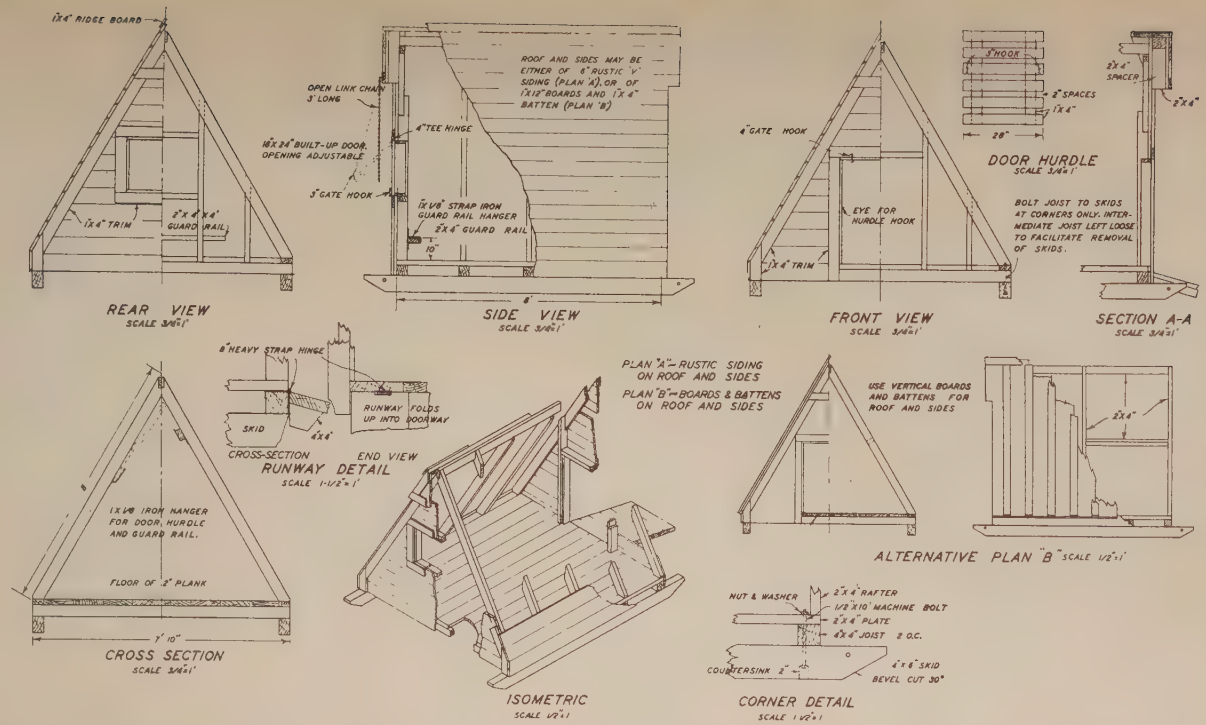

Fig. 27.—"A" type field house. Plan (**A**) with rustic siding, roof and ends. Plan (**B**) with boards and battens. (Specifications for all types of equipment discussed in this bulletin available through Department of Agricultural Engineering of this Station.)

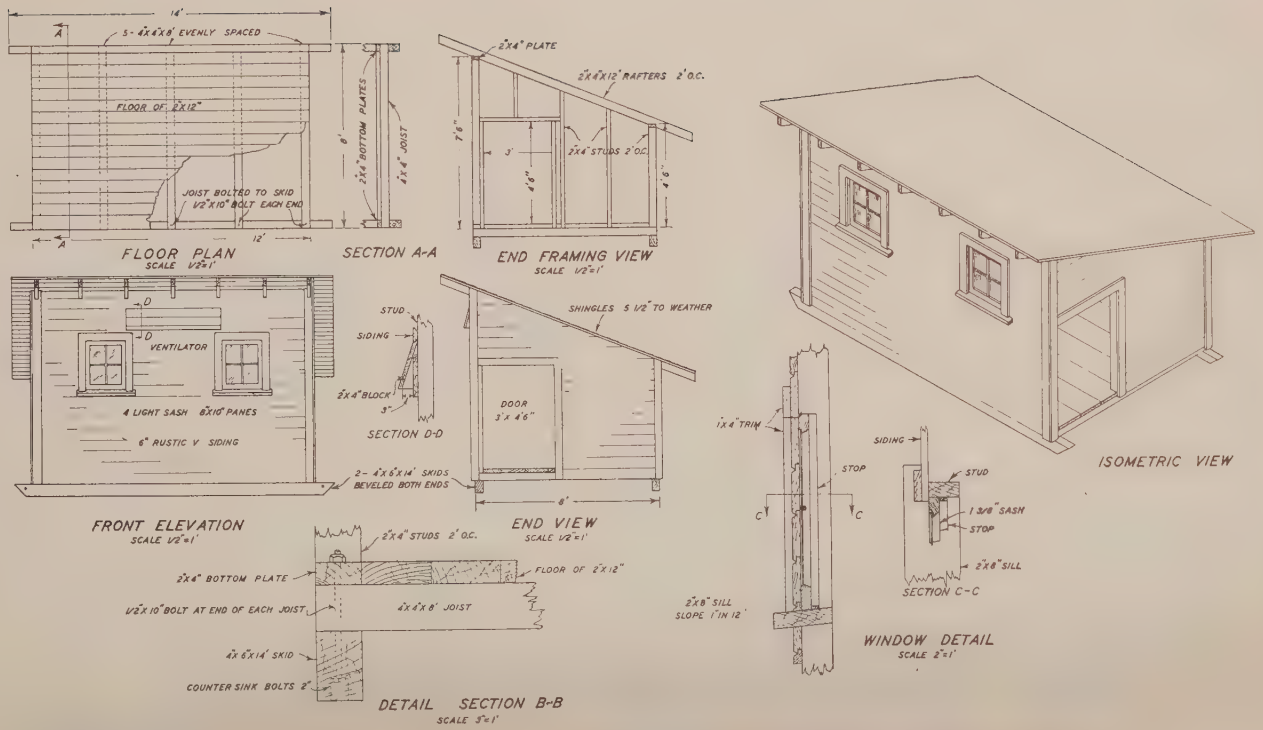

Fig. 28.—One-way field house. A satisfactory type when more room is desired than is available in the "A" type.

Shipping Crates. Shipping crates should be made of light but sound materials. The sizes given for the different weights will normally be satisfactory. Very growthy, thin hogs and chuffy, fat hogs cannot be accommodated with a crate that is designed for pigs normal in weight and development. A hog should have comfortable room in a crate. (Fig. 29).

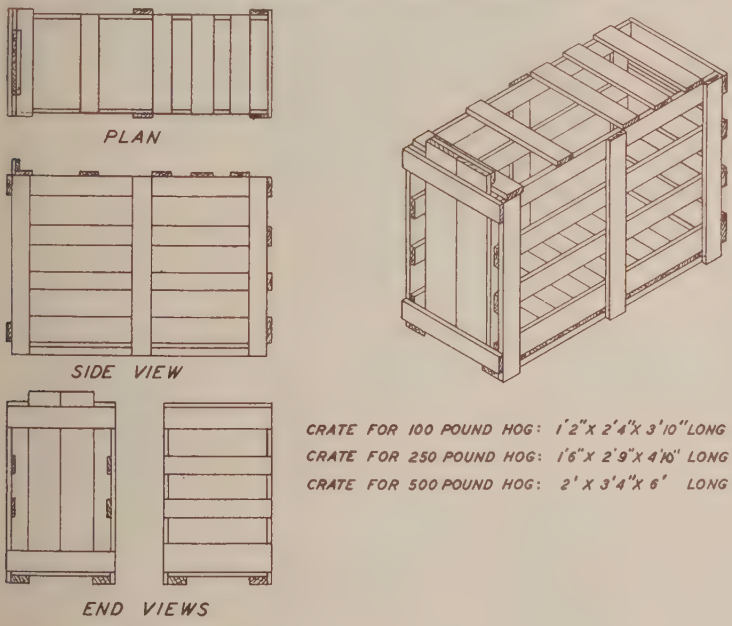
PLAN
SIDE VIEW
END VIEWS
CRATE FOR 100 POUND HOG: 1'2"X 2'4"X 3'10"LONG
CRATE FOR 250 POUND HOG: 1'6"X 2'9"X 4'10" LONG
CRATE FOR 500 POUND HOG: 2' X 3'4"X 6' LONG

Fig. 29.—Shipping crate for hogs.

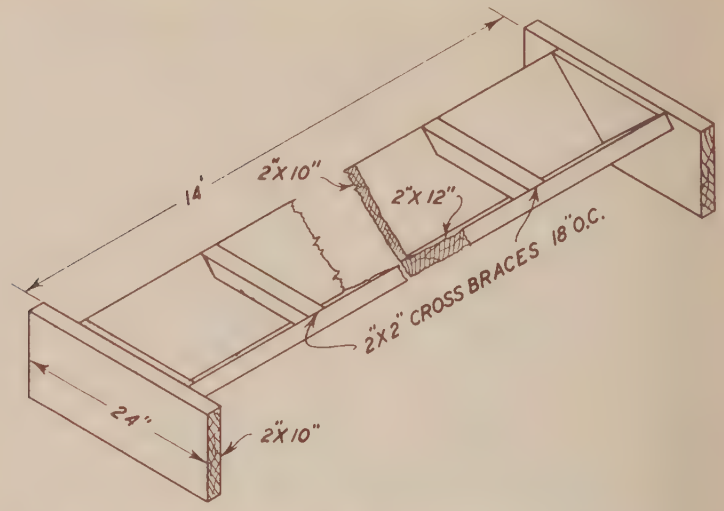

Fig. 30.—Standard V-type trough. Note reinforced ends and possibility for double nailing.

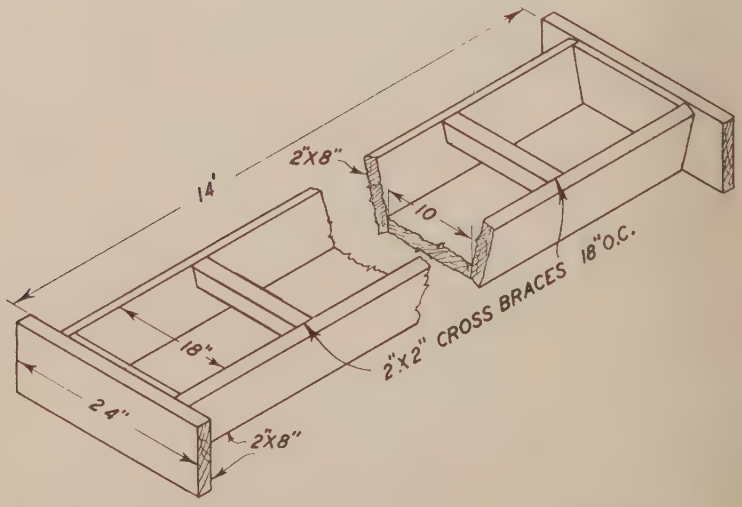

Fig. 31.—Beveled box type trough. Note reinforced ends and possibility for double nailing.

TABLE IV

"A" Type Portable Hog-House

Building Material for Plan B (Board and Battens)

Materials as Bought			Material as Used		
No. of Pieces	Size of Stock (inches)	Length (feet)	No. of Pieces	Length (feet)	Use
2	4x6	10	2	10	Skids
5	4x4	8	5	8	Joist
1	4x4	6	2	3	Joist for runway
7	2x12	8	7	8	Flooring
1	2x6	8	1	8	Flooring
8	2x4	8	8	8	Plates and rafters
2	2x4	8	4	3'9"	Purlins
1	2x4	10	1	9'	Ridge pole
1	2x4	14	1	2'6"	Door lintel
			2	2'	Window
			4	1'8"	Ventilator
2	2x4	10	4	5'	Studs, window and door
1	2x4	10	4	2'6"	End studs
2	1x6	10	2	9'	Ridge boards
2	1x4	10	6	2'4"	Door hurdle
			2	2'10"	
26	1x12	8	18	8	Roof
			8	Vary	Ends
25	1x4	8			Battens
1	1x4	10	2	3'2"	Window trim
			2	1'8"	
1	1x4	8	2	2'2"	Window casing
			2	1'6"	
4	1x4	8	4	7'8"	Corner trim
1	1x4	10	2	3'2"	Door casing
			1	2'6"	
1	1x4	12	2	3'9"	Door trim
			1	3'2"	
1	2x12	8	3	2'6"	Runway floor

Summary

No. of Pieces	Size of Stock (inches)	Length (feet)	Board Feet
2	4x6	10	40
5	4x4	8	53
1	4x4	6	8
8	2x12	8	112
1	2x6	8	8
10	2x4	8	54
4	2x4	10	27
1	2x4	14	9
2	1x6	10	10
26	1x12	8	208
1	1x4	12	4
4	1x4	10	13
30	1x4	8	80
		Total.....	626

Miscellaneous

4—½"x10" bolts and washers
2—8" strap hinges
2—4" tee hinges
3—3" gate hooks and eyes
2—4" gate hooks and eyes
3' wire chain
6'—1"x⅛" strap iron
7lb 8d nails
4lb 20d nails

TABLE V

"A" Type Portable Hog-House

Building Material for Plan "A", with Rustic Siding, Roof and Ends

Material to Purchase			Material as Used		
No. of Pieces	Size of Stock (inches)	Length (feet)	No. of Pieces	Length (feet)	Use
2	4x6	10	2	10	Skids
5	4x4	8	5	8	Joist
1	4x4	6	2	3	Runway joist
12	2x4	8	12	8	Plates and rafters
4	2x4	8	4	2'8"	Studs
			4	5'2"	
1	2x4	8	1	8	Ridge pole
1	2x4	14	1	2'6"	Door lintel
			2	2	Window
			4	1'8"	Ventilator
1	1x4	10	2	3'2"	Window trim
			2	1'8"	
1	1x4	8	2	2'2"	Window casing
			2	1'6"	
4	1x4	8	4	7'8"	Corner trim
2	1x4	10	2	7'2"	Door casing
			1	2'6"	
1	1x4	12	2	3'9"	Door trim
			1	3'2"	
1	1x4	8	4	1'	Ventilator trim
			2	1'8"	
2	1x6	10	2	9	Ridge boards
2	1x4	10	6	2'4"	Door hurdle
			2	2'10"	
7	2x12	8	7	8	Floor
1	2x6	8	1	8	Floor
1	2x12	8	3	2'6"	Floor of runway
40 Bd. Ft. 1"x6"x10'					
200 Bd. Ft. 1"x6"x8'					

Summary				Miscellaneous
No. of Pieces	Size of Stock (inches)	Length (feet)	Board Feet	
2	4x6	10	40	4—½"x10" bolts and washers
5	4x4	8	53	2—8" strap hinges
1	4x4	6	8	2—4" tee hinges
7	2x12	8	128	3—3" gate hooks and eyes
1	2x6	8	8	2—4" gate hooks and eyes
17	2x4	8	91	3' wire chain
1	2x4	14	9	3'—1"x⅛" strap iron
3	1x4	10	10	4lb 20d nails
1	1x4	12	4	6lb 8d nails
6	1x4	8	16	
2	1x6	10	10	
Rustic	1x6	10	40	
Rustic	1x6	8	200	
		Total	617	

TABLE VI

Bill of Materials for Shed Roof Field House

Material as Bought			Material as Used		
No. of Pieces	Size of Stock (inches)	Length (feet)	No. of Pieces	Length (feet)	Use Made of Pieces
2	4x6	14	2	14′	Skids
5	4x4	8	5	8′	Joist
7	2x12	12	7	12	Flooring
1	2x6	12	1	12	Flooring
1	2x8	6	2	2′8″	Window sill
7	2x4	12	7	12	Rafters
4	2x4	12	4	12	Plates
7	2x4	12	7	7′2″	Studs, front
			7	4′2″	Studs, back
2	2x4	12	2	6′	Studs, end
			2	5′3″	Studs, end
1	2x4	14	1	6′10″	Studs, end
			1	4′6″	Door stud
			1	2′	Door stud
5	1x4	16			Trim
1	2x4	8	1	4′6″	Door stud
			1	3′6″	Door lintel

Summary				Miscellaneous
No. of Pieces	Size (inches)	Length (feet)	Board Feet	
2	4x6	14	56	10—½″x12″ bolts
5	4x4	8	53	2—4-light sash, 8″x10″ panes
1	2x6	12	12	3½lb 3d nails
1	2x8	6	8	10lb 8d nails
20	2x4	12	160	7lb 20d nails
1	2x4	14	10	4 bundles shingles
1	2x4	8	5	
5	1x4	16	27	
		Total.....	331 Bd. Ft.	

TABLE VII

Bill of Materials for Pig Shipping Crates

Material as Bought			Material as Used		
No. of Pieces	Size of Stock (inches)	Length (feet)	No. of Pieces	Length (feet)	Use
			Crate for 100 pound hog: 1′2″x2′4″x3′10″		
1	1x6	12	9	1′4″	Floor
1	1x6	10	3	2′8″	Door
			1	1′6″	End
1	1x6	8	2	3′10″	Sides at bottom
2	1x4	8	6	2′7″	Sides
1	1x4	10	6	1′6″	Top and ends
3	1x4	8	6	3′10″	Sides
1	1x4	8	4	1′4″	Top
			2	1′4″	Door cross pieces
1	2x4	8	2	4′	Floor joist

TABLE VII (Continued)

Summary

1—2x4x8	6 Board Feet
1—1x6x12	6
1—1x6x10	5
1—1x6x8	4
1—1x4x10	3
6—1x4x8	16
Total	40 Board Feet

Material as Bought			Material as Used		
No. of Pieces	Size of Stock (inches)	Length (feet)	No. of Pieces	Length (feet)	Use
			Crate for 250 pound hog: 1'6"x2'9"x4'4"		
2	1x6	8	10	1'8"	Floor
1	1x6	12	3	3'2"	Door
			1	1'10"	End
1	1x6	10	2	4'4"	Sides at Bottom
2	1x4	10	6	3'	Sides (vertical)
1	1x4	12	6	1'10"	Top and ends
2	1x4	14	6	4'4"	Sides
1	1x4	10	4	1'8"	Top
			2	1'8"	Door cross pieces
1	2x4	10	2	4'6"	Floor joists

Summary

2—1x6x8	8 Board Feet
1—1x6x12	12
1—1x6x10	5
3—1x4x10	10
1—1x4x12	4
2—1x4x14	9
1—2x4x10	7
Total	55 Board Feet

Material as Bought			Material as Used		
No. of Pieces	Size of Stock (inches)	Length (feet)	No. of Pieces	Length (feet)	Use
			Crate for 500-pound hog: 2'x3'4"x6'		
2	1x8	12	10	2'2"	Floor
4*	1x4	12	7	6'	Floor
1	1x6	14	3	3'9"	Door
			1	2'4"	End
1	1x8	12	2	6'	Sides at bottom
2	1x4	12	6	3'7"	Sides (vertical)
1	1x4	14	6	2'4"	Top and ends
3	1x6	12	6	6'	Sides
1	1x4	14	4	2'2"	Top
			4	2'2"	Door cross pieces
1	2x4	12	4	6'	Joists (floor)

*The floor is made double thickness to support heavy hogs, the top layer of boards being laid lengthwise.

TABLE VII (Continued)

Summary

5	1x6x12	30 Board Feet
6	1x4x12	24
1	1x6x14	7
1	1x8x12	8
2	1x4x14	10
1	2x4x12	8
	Total	87 Board Feet

Questions

1. What comforts should be provided in a house for swine?
2. Why should you provide a platform entrance to the house?
3. How is the temperature regulated in the "A" type field house in Fig. 27.
4. What have you learned about floor construction?
5. Is an eight foot house preferred to a seven foot house? Why?
6. What are some advantages of a field house over a permanent house?
7. What are some essentials for a shipping crate?

Lesson XI

Judging Swine

SUCCESS in pig projects depends, in large part, upon the ability of the club member to know, at least in general, what constitutes a good hog. It is desirable, therefore, for each club member to learn the names of the different parts of a hog and to become apt in evaluating these parts. A club member is in a better position to get the most from judging demonstrations when he knows the parts of a hog. Spend some time in learning, from the outline in Fig. 32, the names of parts you do not already know.

How to Proceed in Judging Swine

In the process of learning how to judge swine, one should become familiar with how to recognize the most essential things first and be able to evaluate them properly. The details, many of which are very important in commercial as well as in purebred swine, must also be mastered. The fundamentals of form and also of function should always be the basis for judging. Help should not be solicited when you are placing a class. This is a splendid opportunity to learn, and to develop confidence in your own judgment.

Judges with experience always make their first observations at some distance from the animals. This method makes it possible to observe and study the general balance, type, and character better than at close range. One should always move slowly all the way around the animal at a distance of about twenty feet. This makes possible a front, side, and rear view. The tendency often prevails to handle animals too much. Details that are observed in this way are often confusing. Judging livestock is based essentially on observations made by the eyes. The hands are used in a supplementary way in verifying observations that may not be clear to the eyes.

Experienced livestock men are always quiet around animals and it is no small part of the training in judging, to learn how to conduct one's self around the different kinds of animals. The manner in which one acts around livestock is almost invariably a good index as to how much experience one has had with livestock. This important fact should be learned early in your work with livestock.

If the score card method of studying an animal is used, an undue amount of emphasis should not be placed upon the score values for the different points of the animal because it leads to confusion when one animal is compared with another. As an illustration, one point is the highest score given on the score card for perfect eyes. This score cannot apply in comparing one hog with another, because a blind hog would not only be penalized one point, but he would be rejected entirely. Similar illustrations could be given for many of the other points. The student should, therefore, be taught not to carry score card values over into comparative judging.

Giving Reasons

When a person is trained to observe animals in a logical, convenient, and efficient manner, he usually develops with this method the desirable

custom of giving reasons for his decisions in the same order. He gives the most essential reasons first and completes the discussion with the details. This is usually good form when one is giving reasons on a class of animals in a limited time.

When reasons are given on a class of hogs that has been placed in accord with one's best efforts, they should always be given by comparison. One should make plain by comparison why the one that has been placed first is superior to the one that has been placed second, the second over the third, and the third over the fourth. Reasons should be well organized and to the point.

The comparative form "better" should never be used in comparing two animals. If a student should say that one hog has a "better" ham than another hog, it is rather meaningless unless the student has made clear what constitutes a "good" ham. It is more satisfactory to be specific in the comparison, and say; "the ham of number one is deeper, wider, thicker, more smoothly and firmly fleshed than the ham of number two," providing of course, that such is the case. A student should force himself to develop a substantial vocabulary of descriptive terms so he will be less tempted to resort to the use of "better".

The discussion that follows will give an idea of how one should proceed to examine a fat barrow. The same method of inspection can be applied to any other kind of hog.

In examining a fat barrow, one observes the general *form, quality,*

Fig. 32.--Points of the hog.

1. Snout
2. Face
3. Eye
4. Ear
5. Cheek
6. Jowl
7. Poll
8. Neck
9. Shoulder
10. Fore leg
11. Dew claw
12. Pastern
13. Toes
14. Back
15. Loin
16. Side
17. Belly
18. Fore flank
19. Rear flank
20. Rump
21. Ham
22. Rear leg
23. Tail

and *condition* first. The fat barrow should be deep, broad, at least medium in length, uniformly balanced, compact, and have a well-supported back that shows a uniform arch, a neatly carried *underline,* and he should stand squarely on his feet and legs. *Quality* should be evident in a trim jowl and underline, smoothness in the skin, refinement in the hair coat, in clearly defined joints and in a firm, yet mellow and smooth, finish. The *condition* should be thick, yet not excessive in this respect. It should also be even and firm.

Upon further inspection of the barrow, one should make his examination of the most essential points first. The *back* should be broad, thickly, evenly and firmly fleshed and show a uniformly strong arch. The *loin* should be broad and strong, well fleshed and smooth. The *rump* should be long, rounding slightly from loin to root of tail and carry its width well back. The fleshing over the rump should conform with the fleshing over the back and loin.

The *sides* in high class barrows are deep, at least medium in length, and smoothly and firmly fleshed. They show fullness and firmness in the *flanks* and trimness in the *middle.* The *hams* are deep, wide, smooth, and well-fleshed. The *shoulders* are deep, neatly laid, and conform in fullness and fleshing with the other parts of the body.

The *head* should be not to exceed medium in length, broad, trim in the *jowl,* and harmonize in neatness with the entire body. The *neck* should be short and show fullness. It is important that the neck join the shoulders smoothly. The *legs* should be straight, and set well apart, and the *feet* should be well-shaped.

There should be a harmonious balance of all parts in general development, in finish, trimness, and quality.

Judging Terms

There are a number of terms used in judging livestock that should be understood and correctly used by club members, at least by those who have had two or three years of judging experience. The proper use of these terms affords short cuts in discussions of an animal, but they are generally quite meaningless if used without full information of their specific application. Experienced breeders speak in terms of:

Type	Quality
Breed Type	Scale
Breed Character	Sex Character
Balance or Symmetry	Substance

Type has been ably defined as "an ideal or standard of perfection combining all the characteristics which contribute to the animal's value and efficiency for the purpose specified". Thus the breeders of the lard breeds are striving to produce a lard type and, therefore, in general, the lard breeds look somewhat alike.

Breed Type. A breed is a group of domestic animals termed such by common consent of the breeders. It is, of course, urgent that all hogs which belong to a breed should be of the same general shape and have the same general characteristics. When a hog is favorable in breed type he must possess, in a satisfactory degree, the body conformation, color, shape and appearance of the head and face that is approved as typical of the breed he represents.

Breed Character. While breed type includes, in general, breed character, it is commonly understood that the latter includes more specifically those differences in degree of development of qualities as color, neatness in shape and placement of the ear, shape of the face, and style in general.

Balance or Symmetry in an animal includes proportional or harmonious development of all parts. A hog with a large ham and a restricted loin would lack in the balance of these two parts.

Quality. This term is used rather freely to indicate freedom from coarse bone, coarse rough and curly hair, heavy flabby jowls, and a general absence of wrinkles. The term refinement should not be used in place of quality. Refinement of bone, for instance, may be carried to the extreme. An ample amount of bone need not conflict with quality.

Scale. A very compact and excessively fat hog may be heavy even though he is not large. Hence weight should not be used in place of scale because the latter has reference to size as a result of growth in particular.

Sex Character. A boar should be characterized by ruggedness and vigor. To be masculine he must have ample bone, desired width in his forehead and between his eyes. Over-development in the thickness of neck and shoulders is often erroneously associated with ruggedness.

Females should be feminine and generally refined about the head and forequarters. A sow is valued for her ability to produce pigs, and the matronly characteristics are as a rule evidence of this ability.

Substance. This term has reference to the amount of bone in particular. It is, of course, clear that a hog with considerable scale must have an ample amount of bone to carry his weight. Too much substance tends to coarseness. Too little bone makes the animal appear refined in the extreme. He is then often described as lacking in substance.

Questions

1. Why is it desirable for a pig club member to learn how to judge hogs?
2. (a) What are some of the first things to learn?
   (b) Can you name all the parts of a hog?
3. Why is a score card used for beginners?
4. Why should you not use "better" when you are comparing two animals?
5. How should one act around livestock? Why?
6. How would you proceed to examine a class?
7. Give one method for organizing reasons.
8. Why is it important for boys advanced in club work to become familiar with such terms as type, symmetry, quality, etc.?
9. What do you understand by (a) quality, (b) type?
10. Define: (a) substance, (b) scale, (c) breed type.
11. Define: (a) breed character, (b) sex character.

Lesson XII

Preparing for Show

THE EXPERIENCED hog man begins very early in the summer to shape up the pigs he expects to show in the fall. His attention during the summer is centered primarily on getting the proper development in his pigs. They must have the right feed and exercise so they will grow and be thrifty. During the summer he studies the pigs carefully with a view to making it easier for him to select the best when he starts the actual fitting operations. He makes selections from the herd for entries in the breeding classes and in the fat classes. In the early part of the summer these may be treated the same. As the season advances, however, the time comes when the pigs that are to be finished as fat barrows must be fed apart from the others. Barrows should carry more finish than young boars and gilts. Feeding recommendations are given in another part of this Bulletin.

Barrows should be fed with a view to developing a smooth and firm finish at the time they reach the 200-pound weight. Some caution must be observed in fitting barrows. Too much crowding early in the season with fat-producing feeds will often break down a barrow in the pasterns and knees and also cause him to go rough in general. The market wants moderately finished hogs that are firm and smooth. Overdone barrows are not attractive to the buyer or judge and are not satisfactory for the trade.

Growth and sound development are very important in developing gilts and boars. They should not be so fat as barrows, but carry enough condition to make them appear neat, trim, smooth, and useful. A gilt or boar

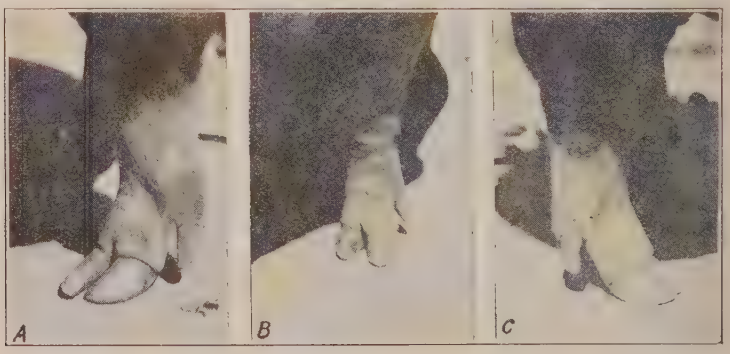

Fig. 33.—**A**. A badly cared for foot showing toes too long and uneven, and the dew claws very long. **B**. The toes spread too much. **C**. Bottom of foot does not make level contact with the floor. The toes have been cut slightly too short and the foot pad left too full.

that carries excessive fat usually is broken down in the feet and legs, is coarse, and often appears short, low set, and too thick to be useful for breeding purposes. The most important consideration in preparing for show is to develop the pig properly.

Fair Classifications

A club member should keep in close touch with his leader so that he may be assured of making the right entries for the show. Local fairs often differ in their classification of entries. The larger fairs use standard classification. Pigs that are farrowed between March 1 and September 1, are junior pigs, and when they are farrowed between September 1 and March 1 they are senior pigs. Obviously, the junior and senior pig entries one year, become junior and senior yearling entries the following year. The aged class is made up of hogs that were farrowed two years prior to September 1 of the year in which the show is held.

Fitting the Pig

It is always well to bear in mind that the judge has only a short time in which to observe each pig. The club member should, therefore, make it a point to have his pig look the very best, and be under perfect control, when the judge is making his observations. It requires some time to have everything in order for the occasion.

Trimming the Toes. The length of the toes determines, in large part, how the pig will stand on his pasterns. The club member should pay attention to this at least six weeks before the show. The toes should be trimmed carefully so the pig will not become lame, as most pigs recover slowly from this injury. Lame hogs, are, as a rule, not given a place in the show ring.

A knife, or nipper and rasp may be used for trimming feet (Fig. 34). Stand the pig on hard ground, or, better, on a floor, and trim the toes back until his weight is even on the base of the foot. If it is necessary to use a crate, place the pig in an ordinary shipping crate with the two lower side boards removed and work through this opening. When it becomes necessary to trim the feet on an older hog a trimming crate may be necessary if the hog is not gentle. Club members sometimes set a day for

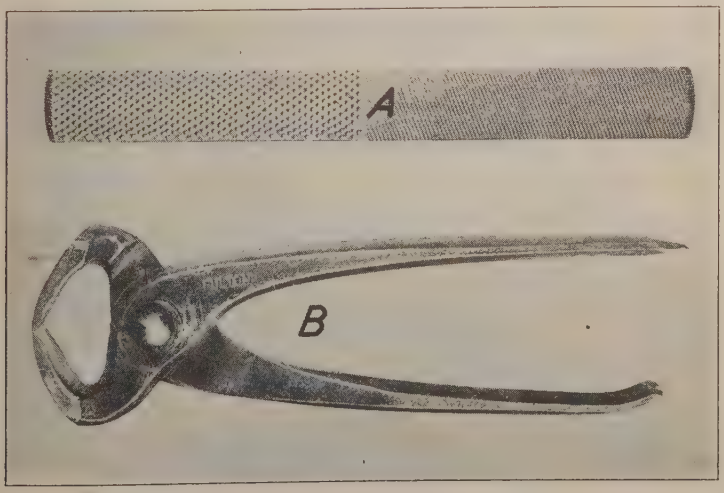

Fig. 34.—**A.** Eight-inch double rasp. **B.** Eight-inch nippers.

this work and move from place to place with a crate such as the one illustrated in Fig. 35, and trim the feet of the heavier hogs they expect to show.

Washing. The object of washing is to get the pig clean all over and to train the hair. Clean, dry straw is one of the best conditioners for the hair. Some of our successful swine herdsmen wash the hogs with soap and water every week or two beginning at least eight weeks before they start out on the show circuit. These early washings help to loosen up the scurf, which is removed by subsequent washings. These herdsmen also feel that these washings help to put the hair in shape, and that it probably also helps to remove the old hair. There is some variation in how the hair on different hogs responds to washing. Water tends to make some hair rough. It is well to study the response to frequent washings carefully. The soap should always be thoroughly washed out of the hair. Dry the

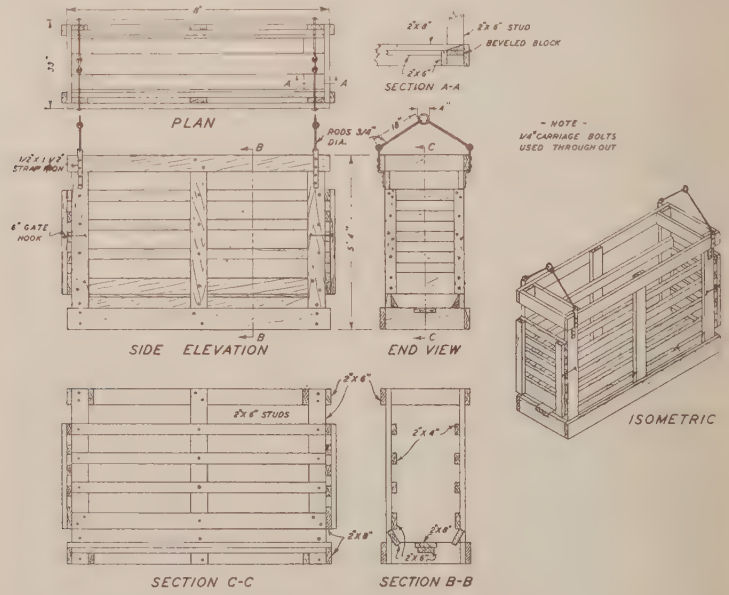

Fig. 35.—Lifting crate for use with large hogs.

pig by brushing it in the direction of the hair slope. This will help to train the hair and it also has a wholesome effect on the skin.

Oiling. Vegetable oils are used for oiling hogs that are to be exhibited as they soften the skin and give gloss to the hair. It is not the amount of oil that is applied, but it is the manner of applying it that gets the result. Use the least oil possible. Sprinkle the oil on a brush and distribute it over the hog by brushing thoroughly in the direction of the hair slope. It is not a good policy to oil a hog just before he is driven into the show ring as he will invariably look too freshly oiled. Some successful herdsmen never oil the hogs on the day they show them. Their attention to this detail has been so complete the day before that they merely brush the hogs

TABLE VIII

Bill of Materials for Lifting Crate

Material as Bought			Material as Used		
No. of Pieces	Size of Stock (inches)	Length (feet)	No. of Pieces	Length (feet)	Use made of piece
7	2x6	8′	3	8′	Sides and bottom
			4	7′8″	Sides and bottom
6	2x4	8′	6	7′8″	Sides
3	2x8	8′	3	8′	Sides and bottom
1	2x8	10′	4	2′6″	Doors and ends
1	2x6	10′	4	2′6″	Ends
1	2x4	14′	4	3′4″	Doors
2	2x4	10′	8	2′6″	Doors
3	2x6	12′	6	5′4″	Uprights and blocks

Summary				Miscellaneous
No. of Pieces	Size of Stock (inches)	Length (feet)	Board Feet	
1	2x8	10′	13	56″—½″x1½″ strap iron
3	2x8	8′	32	2 steel rings, 4″ outside diameter of ¾″ material
3	2x6	12′	36	7′4″x¾″ iron rods
1	2x6	10′	10	4—6″ strap hinges
7	2x6	8′	48	2—6″ gate hooks
1	2x4	14′	9	16—½″x4½″ bolts and nuts
2	2x4	10′	14	88—¼″x4″ bolts and nuts
6	2x4	8′	32	12—¼″x8″ bolts and nuts
		Total.....	194	

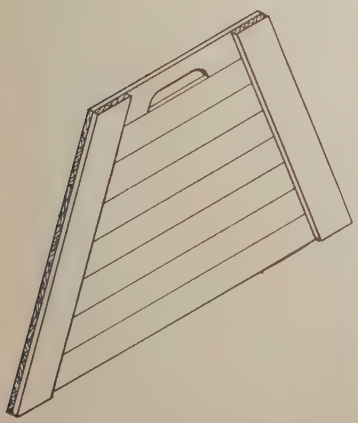

Fig. 36.—Hurdle "A" is made 3′ long at the bottom and 1′6″ long at the top. It is 2′ high. Half inch ceiling material may be used for the body of the hurdle and ½″ by 3⅝″ lumber for the ends. The handle should be made of 1″ lumber.

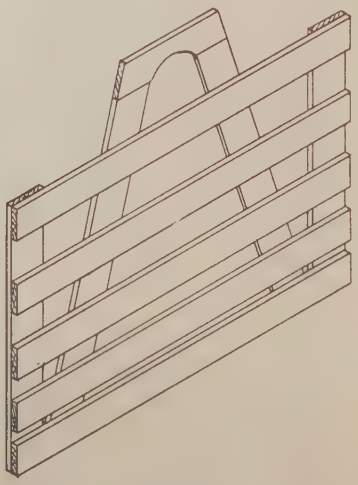

Fig. 37.—Hurdle "B" is made of ¼″ by 3⅝″ material. It is 3′ long and 1′8″ high. The hurdle length at the top is 10″. The handle top of the hurdle is 8″ above the body of the hurdle.

or use a woolen cloth on them before they drive into the show ring. A judge dislikes to work on hogs that are freshly oiled, especially when those fitting the hogs have used lamp black in the oil, which is sometimes done on the black breeds.

Trimming the Hair. The long hair should be trimmed off the outside and inside of the ears. The tail should be clipped, excepting the brush at the end of the tail. Long hairs found about the face or jowls should be carefully clipped so their removal is not apparent. The hair may be clipped with a set of common shears or it may be removed with a clipper.

Training the Pig

The pig should be under control when he is in the show ring. It is necessary to spend considerable time with a pig to get it to respond properly to the cane. When a club member is training a pig to get it under control, he should try to observe how the particular pig should be trained to show to the best advantage. A pig usually shows best with his head down and his back up and his feet placed squarely under him. If the pig is somewhat nervous, it is well to be equipped with a small hurdle and a cane. Hurdle "A" in Fig. 36 or hurdle "B" in Fig. 37 is convenient. With this equipment, the pig should be trained to move about gently and to show himself well. A club member should remember that he must have patience and interest enough to learn how to show the pig, and then it takes a little more patience to teach the pig how to be shown.

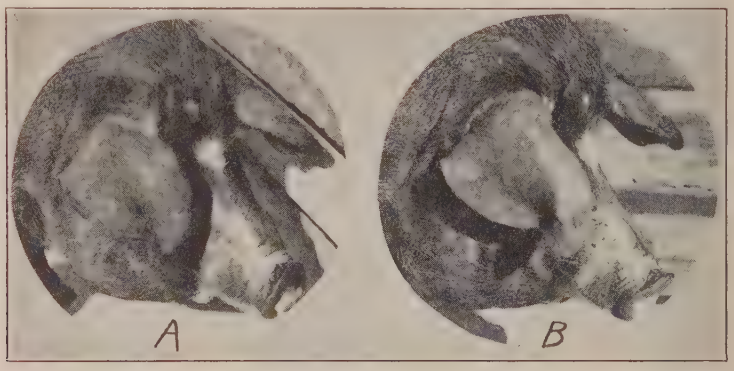

Fig. 38.—Trimming the long hair from the ears makes them appear much neater. **A**. Before trimming. **B**. After trimming. The dotted line indicates the place where the clipped hair should gradually blend into the long hair.

Showing the Pig

It is well to have all the details taken care of a little while before the class is called so the pig is resting for his final brushing before he goes into the show ring. Be on time, but do not appear excited. Drive the pig into the ring slowly and do not try to drive the pig over to the judge. He will find your pig if you do not hide him away in a corner. It is always well not to get between the pig and the judge. Remember it is the pig that the judge wishes to see. Be courteous to the judge and to your competitors. If the judge seems to overlook you for the moment, keep on

showing until the last ribbon is placed. He may be watching you from the other side of the ring.

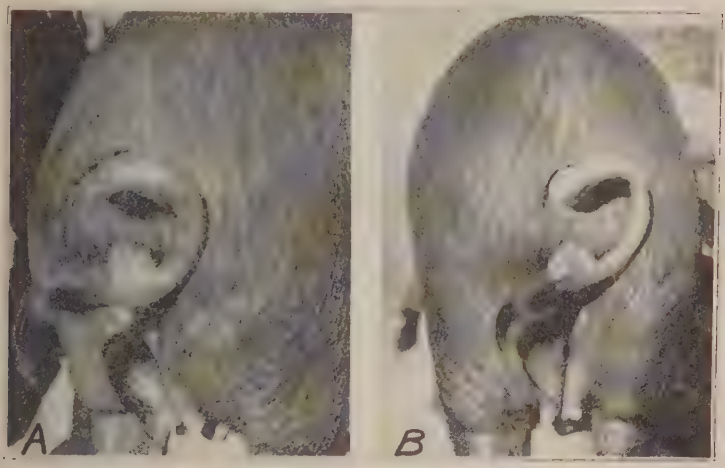

Fig. 39.—The hair is clipped from about the upper one-third of the tail. **A.** Before trimming. **B.** After trimming. The hair should not be trimmed as far down as the switch.

Fig. 40.—A few boys testing their skill in showing hogs.

Questions

1. When should you start getting the pigs in shape to show? Why?
2. When is it advisable to select the animals to show?
3. If you are fitting barrows, what weight should you plan to have in the finished barrow? Why?
4. What other qualities should you attempt to develop in the show barrow?
5. Discuss the trimming of pigs' feet.
6. How should a pig be washed and what is the purpose of washing? When should you commence washing the show pigs?
7. How should a pig be properly oiled? What kind of oil may be used? Why?
8. What other work should be done to develop a smooth coat of hair?
9. How would you train a pig before you show him?
10. What are some things worth knowing when you show a pig?

Lesson XIII

Marketing

HIGH quality hogs that are well finished at a weight of 200 pounds are normally the most popular on Intermountain and Pacific Coast markets. It is from this kind of hogs that the pork chop, ham, and bacon are produced that command the highest price in the retail trade. Cuts from hogs at little lighter than 200 pounds sell readily, as a rule, while the interest in the larger cuts decreases as the weight increases. All of the hogs that are sold are not equally acceptable to the buyer of hogs and he must make price distinctions on the basis of the use for which the various grades of hogs are adapted. Heavy sows produce much larger and coarser cuts than the 200-pound barrow. They also yield a much higher percentage of lard unless their carcasses are processed, in part, into salt pork cuts. Lard is relatively lower in price than lean cuts. It appears, therefore, that excessively large, fat hogs cannot sell for the same price as the more handy-weight grades.

The difference in weight, finish, quality, and age gives rise to the necessity of grading hogs so that they may be sold on the basis of the use to which they may be put. The large livestock markets are, in general rather uniform in their classification of hogs. Local markets are governed very largely in their price scale for the various grades of hogs by the prices which prevail at the central markets. Inasmuch as the consuming public is rather uniform in its demand for light weight, high quality, and lean pork cuts, it is apparent that it is possible, as it is essential, for the processor of pork products in the various parts of the country to have a rather uniform understanding of values. This is likewise of interest and value to the producers.

Grading

One cannot lay down rules which make it possible to classify every hog accurately. There is also a broader line between grades and classes where the buyer or seller must use his judgment. In an effort to classify hogs on the basis of differences in weight, condition, quality, conformation, and sex, the Bureau of Agricultural Economics, U. S. Department of Agriculture, has tentatively adopted the following standards:

Hog Schedule

Barrows and Gilts

for slaughter:	Light Lights—130-160 pounds Lightweight—160-200 pounds Mediumweight—200-250 pounds Heavyweight—250 pounds up
For feeder and stocker:	Lightweight"130-160

Sows

For slaughter:	Lightweight—275 pounds down Mediumweight—275-375 pounds Heavyweight—375 pounds up

For feeder and stocker:	Lightweight—175 pounds down Mediumweight—175-250 pounds Heavyweight—250 pounds up
Stags	
For slaughter:	Lightweight—300 pounds down Mediumweight—300-450 pounds Heavyweight—450 pounds up

Many of the classes given above are further divided in grades. For example, the grades, which are based largely on quality and finish, in the "Mediumweight" 200-250 pounds class of slaughter barrows and gilts are: prime or No. A1, choice or No. 1, good or No. 2, medium or No. 3, common or No. 4.

Markets often modify these classes to suit local conditions. One of the newspaper market quotations of the Pacific Coast gives the following classification, with the top price on the first class:

Good and choice—	160-225 pounds
Light heavies, smooth—	230-255 pounds
Medium heavies, smooth—	260-295
Sows—	
Fat pigs and skips—	145 pounds and under
Feeders, stockers, underweight pigs—	

Fig. 41.—Hampshire barrow. An excellent type for the market. This barrow is very well finished, nicely balanced and of high quality.

It is very profitable to visit central livestock markets where one may become acquainted with the various details of marketing and where one has the opportunity to study values as they apply to the various classes and grades. This gives one a clearer understanding of the kind of hogs for which the market is paying the highest price. One will also learn by frequent visits to these central markets that no one class of hogs may be the highest in price throughout the entire year. There may be an oversupply in the early winter months of light hogs and a shortage of heavier hogs of the same grade. Under this condition it often happens that the heavier hogs sell for a higher price. This situation is not a rule on the Intermountain and Pacific Coast markets. It points, however, to the

necessity of keeping in constant touch with market trends in order to be intelligently informed on current values.

Shipping

One should not attempt to "fill" hogs too much before they are shipped or hauled to market. Such an excessive "fill" will also invariably influence the buyer to pay less for the hogs. He has handled so many hogs that he is able to determine rather accurately price discounts that are in order on the basis of such a "fill." Hogs with excessive "fill" shrink more in transit and are more subject to injury than are normally fed hogs. Hogs should be handled with care so as to avoid bruising and injury in general. Injured and badly bruised hogs are subject to a reduction in price.

There is usually nothing gained in crowding hogs in cars or in trucks, as such a condition gives rise to a higher percentage of shrinkage and injuries. Thousands of hogs are lost each year from being overcrowded in transit. In the summer and during seasons when the chill is not excessive the cars are bedded with sand. When the weather is hot the sand is usually soaked with water. Ice is also often used in shipping hogs. In winter, in localities where the temperature falls very low, the cars are bedded with straw, and often they are lined with building paper on the more exposed side of the car.

Prices

The largest number of hogs as a rule reaches the market throughout the country in December and January. The smallest number of good hogs reaches the market in August and September. Since supply influences prices, and is not so uniform as the demand for pork, it follows that prices are usually lowest when the number of hogs on the market is the largest, and the price is highest when the number of hogs is the smallest. In the Intermountain and Pacific Coast areas the price is, as a rule, highest in the latter part of August and the first part of September. In seven years during the last eight, the highest price has been paid in August and September. As a rule prices trend downward rather rapidly during the latter part of September, as the spring crop of pigs is coming to market in rather large numbers at that time. During the years 1903 to 1930 the lowest price for hogs in Chicago was paid eleven years in January, ten years in December, three years in February, one year in May and June, and three years in November. During this same twenty-eight-year period the highest price was paid twelve years in August and September three years in March, four in July, two in October, three in January, two in February, one each in April, May, June, and December.

Questions

1. What kind of hogs are in greatest demand on the market? Why?
2. Does the consuming public have any influence in determining the price of hogs?
3. On what basis are hogs graded?
4. What are the advantages of grading hogs?
5. Why should a hog producer visit the market?
6. What precautions should you take in getting hogs ready to ship?
7. What time of the year are hog prices the highest? Why?
8. Why do hog prices fluctuate during the year?

Demonstrations by Pig Club Members

DEMONSTRATIONS in club work need not be limited to the demonstrations suitable for contests at a fair. It is often desirable to urge each boy to arrange a demonstration for the club when it is making a tour to see the pigs owned by the club members. Each boy can be assigned a demonstration at one of the regular meetings so there will be no duplication. The demonstrations should be selected carefully so they are practical for the club members. The following demonstrations suggest possibilities for all types of equipment:

1. *Constructive features of an "A" type house.* A boy who has built such a house as part of his equipment may be selected for this demonstration. In the demonstration, he should point out the desirable features, and be ready to answer questions as to grade of lumber used, dimensions, time required to build, costs and general practicality. He should also point out convenient and practical methods of actually building the house, and wherein some of the features might be improved and costs lowered. These suggestions should be kept in mind also for the following demonstrations:
2. *A practical feeding trough.*
3. *Building a pig creep.*
4. *A useful artificial shade for hogs.*

Other Types of Demonstrations Can Also Be Used

1. *Sanitation in swine production.* The club member should be prepared to show how this is accomplished, and to explain fully the importance of each step. He should also make an effort to point out how sanitary measures may be applied even though conditions may not be so acceptable as those under which he is working.
2. *Making a desirable feed mixture for growing pigs.* Practical feeds should be used and costs kept down. The club members should be able to tell why the mixture is desirable for little pigs.
3. *Pasture demonstrations* are very satisfactory when a club member has the right conditions at hand. Be prepared to tell how the pasture is managed, and also how the pigs are managed while on pasture. It is desirable for the club members to have feed and pig weights in hand so as to point to the actual value of the pasture.
4. *Ear notching pigs is a good demonstration.* Two boys are usually required to do this properly. Be prepared to answer questions.
5. *Castrating pigs can be done by two or more boys.* This should be done by older members of the club under the supervision of the leader.

Publications Recommended for Further Study

Farmer's Bulletins:

1085 F *Hog Lice and Hog Mange.*
1167 F *Essentials of Animal Breeding.*
1263 F *Breeds of Swine.*
1357 F *Castration of Swine.*
1437 F *Swine Production.*
1455 F *Fitting, Showing and Judging Hogs.*

1487 F *Practical Hog Houses.*
1490 F *Hog-Lot Equipment.*
1504 F *Self-Feeding versus Hand-Feeding of Swine.*
U. S. D. A. Leaflet Number 5, *The Prevention of Round Worms in Pigs.*
U. S. D. A. Technical Bulletin 44T, *Swine Sanitation System as Developed by Bureau of Animal Industry in McLean County, Illinois.*

Idaho Experiment Station Publications.

Circulars:

48. *The Physiological Effect of Feeding Rations of Canadian Field Peas on Growth and Reproduction in Swine.*
55. *Wheat and Wheat By-Products in Swine Production.*
56. *Alfalfa Hay and Alfalfa Leaves as Supplements in Dry Lot Rations for Finishing Fall Pigs.*
57. *Wheat Supplemented with Tankage in Limited and Full Grain Rations on Alfalfa Forage.*

Bulletins:

190. *Type in Market Swine and Its Influence on Quality of Pork.*
191. *Hog Prices and The Hog Enterprise on Idaho Farms.*

Extension Bulletins:

101. *Swine Husbandry in Idaho.*

Swine Record Associations

The American Berkshire Association, Springfield, Illinois.
Chester White Swine Record Association, Rochester, Indiana.
United Duroc Record Association, Peoria, Illinois.
American Hampshire Swine Record Association, Peoria, Illinois.
American Poland China Record Association, Union Stock Yards, Chicago.
Standard Poland China Record Association, Maryville, Missouri.
National Poland China Record Association, Winchester, Indiana.
American Spotted Poland China Record Association, Jamesport, Mo.
National Spotted Poland China Record Association, Indianapolis, Indiana.
The American Tamworth Swine Record Association, Ames, Iowa.
The American Yorkshire Club, 1391 Capitol Avenue, St. Paul, Minnesota.